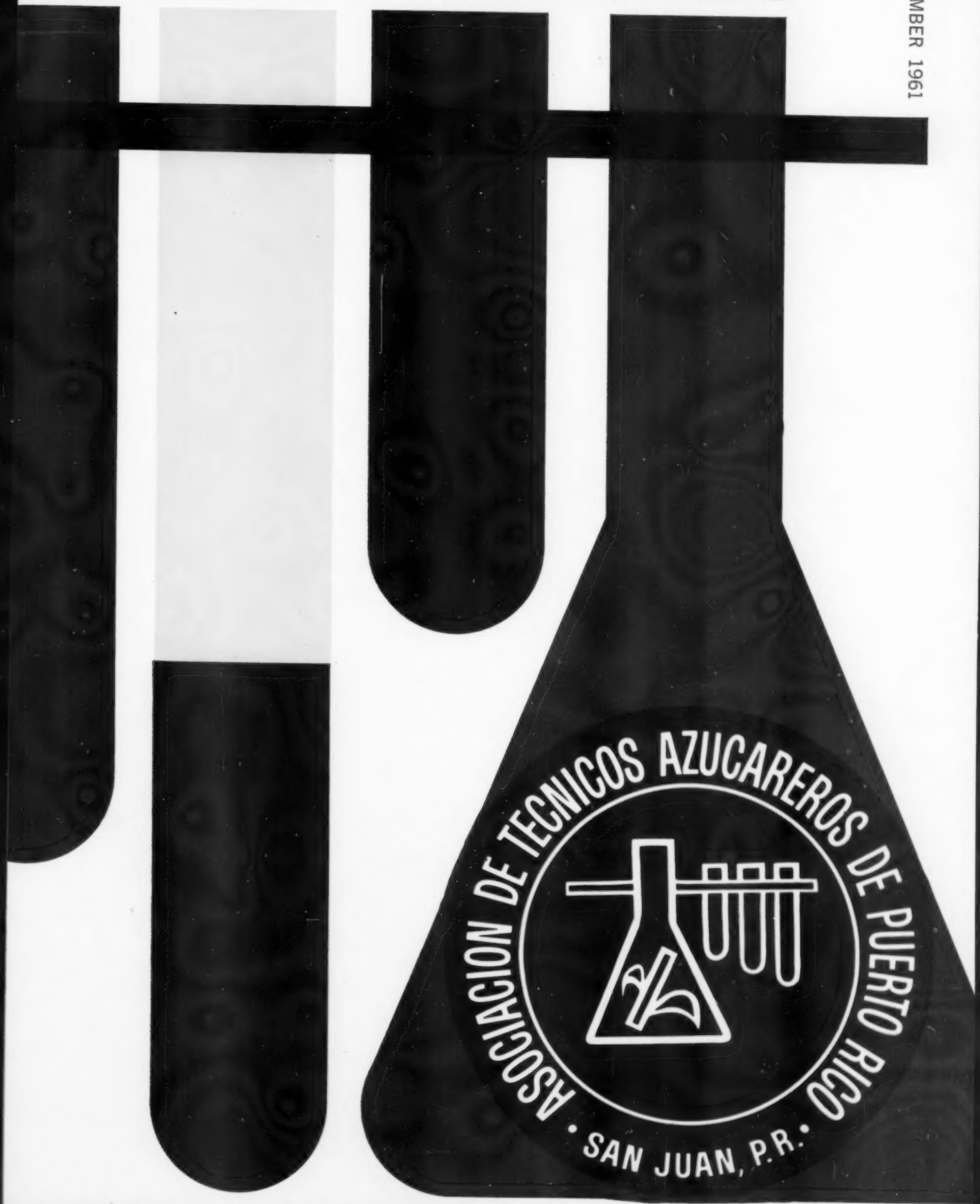
SUGAR Y AZUCAR

DECEMBER 1961



continuous centrifugals

in Hawaii

first-class operating results with most difficult massecuites

service results with fully automatic continuous operation in Hawaii:

	period. after-prod. centr. 1750 r. p. m. basket dia. 40"	**cont. BMA centrif.**	massecuite	
capacity lb/h	1800	**2200**	60,1	polarization
sugar purity	85,1	**85,6**	95,2	Brix
molasses purity	33,9	**33 ,7**	460	viscosity cp, 50° C

Within 2 ½ years 300 continuous BMA centrifugals have been supplied for operation in all parts of the world

Advantages:

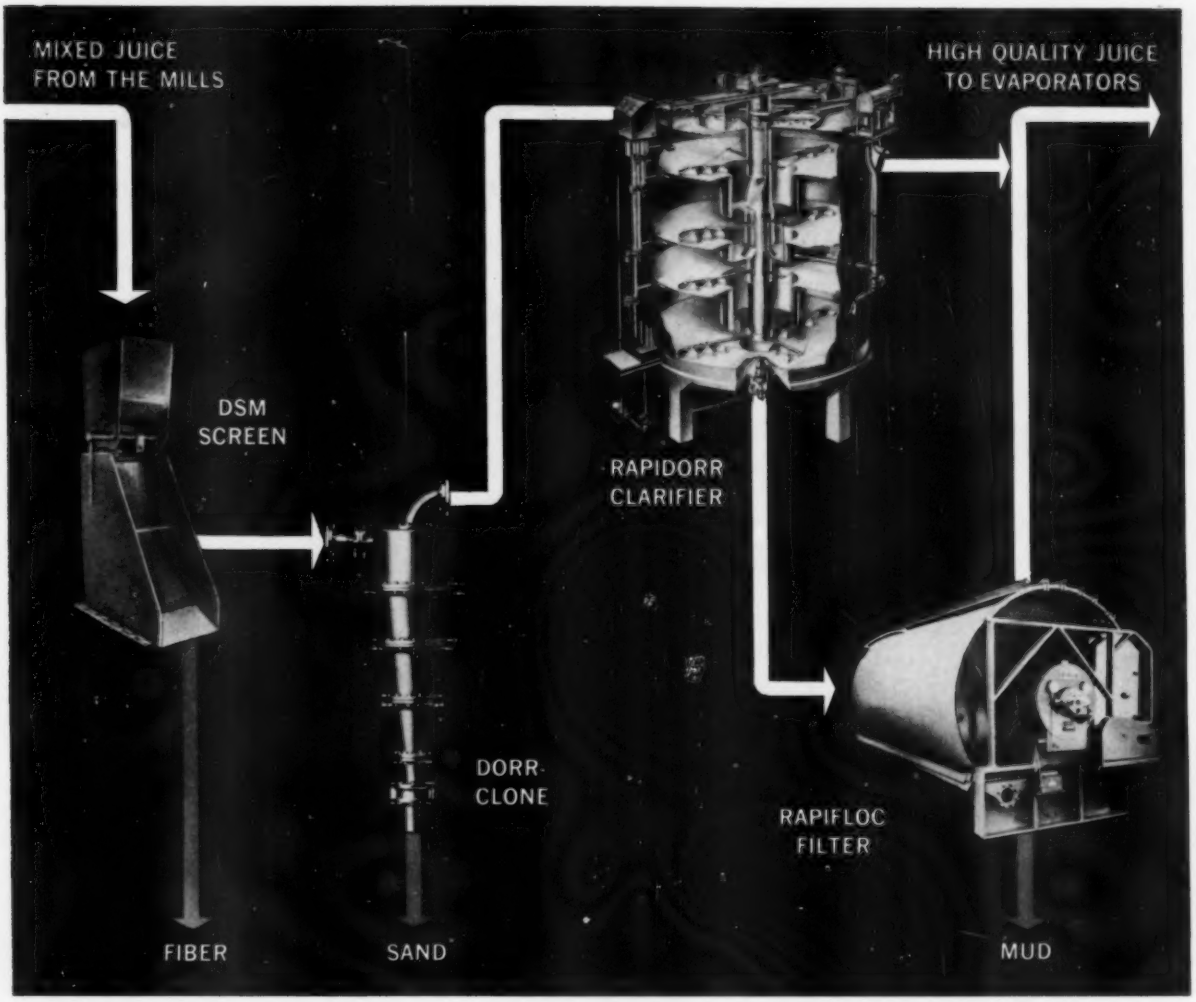
- low purchase price
- uniform power requirements
- low spare requirements
- 1 operator per shift sufficient to supervise "C" station of biggest sugar factory known

BMA

BRAUNSCHWEIGISCHE MASCHINENBAUANSTALT

BRAUNSCHWEIG · WESTERN-GERMANY

Since more than one hundred years complete factories beet sugar, cane sugar as well as plants for alcohol, yeast, a. s. o.



THE DORR-OLIVER CANE JUICE PURIFICATION SYSTEM

allows constant grinding rate . . . delivers high quality juice . . . at lowest cost . . .

The Dorr-Oliver Cane Juice Purification System enables you to process cane juice at a constant grinding rate, achieve maximum sucrose recovery, and deliver brilliant high quality juice to the evaporator at the lowest possible cost per ton. The D-O System is designed to provide the most effective solution to problems of fine fiber removal, desanding, clarification and filtration.

Key features of the system, shown in the flowsheet above, are: the DSM® Screen, which removes the fiber . . . the DorrClone®, which eliminates sand, resulting in increased equipment life . . . the Rapi-Dorr® Clarifier, which provides the high capacity and juice quality needed for superior sugar . . . and the RapiFloc filter, which with a special flocculation step and non-blinding filter media produces a filtrate as clear as normal clarifier overflow.

If you'd like to improve your production rate, and produce the finest juice at the lowest possible operating cost . . . investigate the Dorr-Oliver Cane Juice Purification System. Only Dorr-Oliver supplies all the components.

For complete information on the D-O Cane Juice Purification System, write to Dorr-Oliver Incorporated, Stamford, Connecticut.

DORR-OLIVER

WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

Sugar y Azucar for December, 1961, Volume 56, No. 12. Published monthly by Russell Palmer Trust, Mona Palmer, Publisher. Publication Office, 109 Market Pl., Baltimore, Md. Editorial and executive office, 25 West 45th Street, New York 36, N. Y. Controlled circulation postage paid at Baltimore, Md.

SUGAR y AZUCAR

Volume 56 No. 12 December 1961

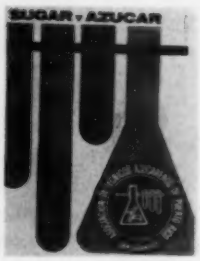
CONTENTS

European News & Notes 8
Theme of 1961 Technologists Meeting 27
1961 Program of Annual Meeting Sugar Technologists Association of Puerto Rico 28
Average Yield in Puerto Rico 30
Centralized Services for Small Farm Group 31
Abstracts of Papers Delivered at 1961 Annual Meeting of the Puerto Rican Sugar Technologists 33
The High Speed Vacuum Pan 37
Economy in Producing Dry Beet Pulp 42
Facts About Sugar 46
Human Relations 54
Sugar Abstracts 55

CONTENIDO

61 Mensaje del Presidente a los Técnicos
62 Programa de la Conferencia de 1961 Asociación de Técnicos Azucareros de Puerto Rico
64 Plan Para Mejorar Nuestra Industria Azucarera
65 Extractos de los Trabajos Presentados ante la Reunión Anual (1961) de la Asociación de Técnicos Azucareros de Puerto Rico
67 Tachío al Vaco de Alta Velocidad
95 Extractos de Publicaciones Azucareras

COVER *Once again members of the Puerto Rican Sugar Technologists meet with their guests and delegates from other sugar producing countries at Caribe Hilton in San Juan from December 6th through the 9th. Program and papers from the meeting constitute a principal feature of this issue and our artist Jack Brown, in using the emblem of the Association, has endeavored to suggest the importance of this annual meeting to the sugar world.*



PORTADA *Una vez más se reunen los miembros de la Asociación de Técnicos Azucareros de Puerto Rico con sus invitados y delegados procedentes de otras áreas azucareras, en el Caribe Hilton de San Juan, desde Diciembre 6 al 9. El programa y los trabajos presentados constituyen el tema principal de ésta edición. Nuestro artista Jack Brown, haciendo uso del emblema de la Asociación, trata de destacar el valor de ésta reunión anual para el mundo azucarero.*

Publisher, MONA PALMER
Editor, E. W. MAYO, JR.
Editor, Spanish Section, MARIO A. MASCARÓ
Advertising Manager, R. E. SLIMERMEYER

NBP BPA

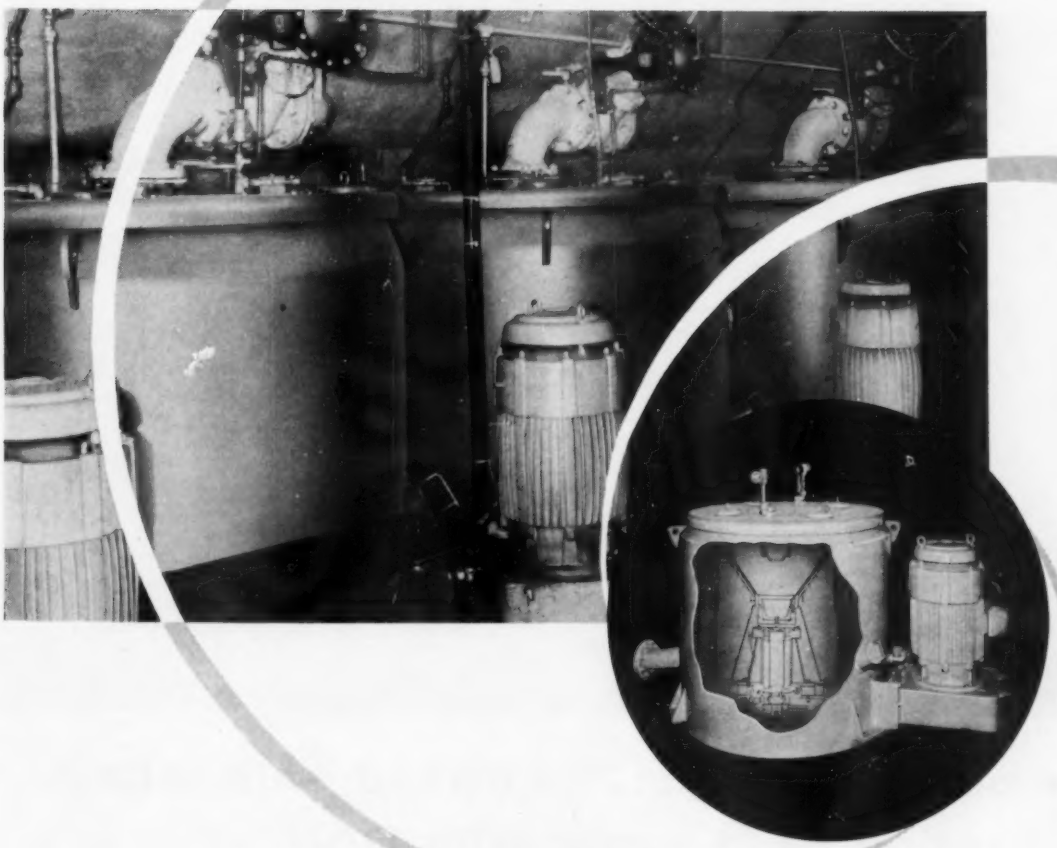
EDITORIAL and EXECUTIVE OFFICE:
25 West 45th St., New York 36, N. Y.
Tel.: JUdson 6-4820
EUROPEAN OFFICE:
G. L. Fetherstonhaugh, St. Paul's Corner, Ludgate Hill, London EC4, Tel. CITY 5318
PUERTO RICO:
Arturo Riollano, P. O. Box 506
Isabela, Puerto Rico
HAWAII:
Roy J. Leffingwell, 235 Queen Street
Honolulu 13, Hawaii

Copyright 1961; Mona Palmer, Trustee. Successor to Facts About Sugar and the Planter & Sugar Manufacturer. Contents of previous issues can be found by consulting the Agricultural Index Service or the Engineering Index Service. Subscription may be paid the London office at £1-15-0 per year; single copies 7s. Published Monthly. Subscription price $5.00 per year; single copies $1.00.

THIS CONTINUOUS CENTRIFUGAL BY

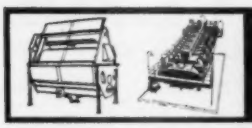
SILVER

CUTS THE POWER LOAD IN HALF



A battery of Silver centrifugals offers the most favorable electrical load and economy. Each 25 hp machine runs continuously at constant power regardless of changes in the mixer load. Separation of raw sugars is very effective since the machine operates on the thin-layer principle. Controls are simple, non-electronic, for positive action and freedom from maintenance.
A unit, installed and ready to run, is priced amazingly low—and keeps its economy in the tradition of sugar machinery by Silver.

Get the full story of reliability, performance and value built into Silver continuous centrifugals. They have no equals.



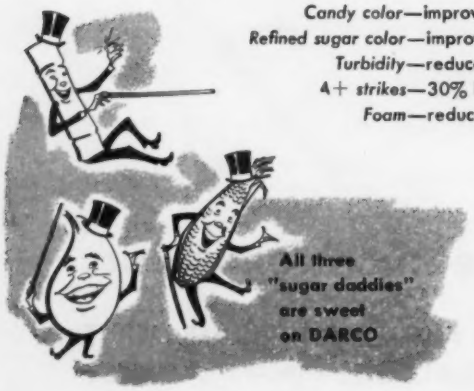
SILVER ENGINEERING WORKS, INC.

SUGAR MACHINERY FOR FIELD AND FACTORY
3309 BLAKE STREET • DENVER 5, COLORADO

For better quality... improved saleability refine beet sugar with DARCO®

By any yardstick of quality measurement, you'll get higher quality and improved saleability of beet sugar when you refine with DARCO activated carbon. Here's an example from the experience of a typical beet sugar factory using DARCO:

Candy color—improved up to 40.5%
Refined sugar color—improved 10 to 24%
Turbidity—reduced 20 to 89%
4+ *strikes*—30% higher
Foam—reduced 81%



You get production bonuses from DARCO, too . . . faster boiling of beet juice, reduced scale in evaporators, faster run-off of molasses at the centrifugals. You can work a higher Brix pan and get increased yields.

Find out how you can improve quality of refined beet sugar . . . and at the same time cash in on better production efficiency . . . by putting DARCO to work in your factory. Just write or call Atlas today.

ATLAS
CHEMICAL INDUSTRIES, INC.
CHEMICALS DIVISION
WILMINGTON 99, DELAWARE
In Canada: Atlas Powder Co., Canada, Ltd.
Branford, Ontario, Canada

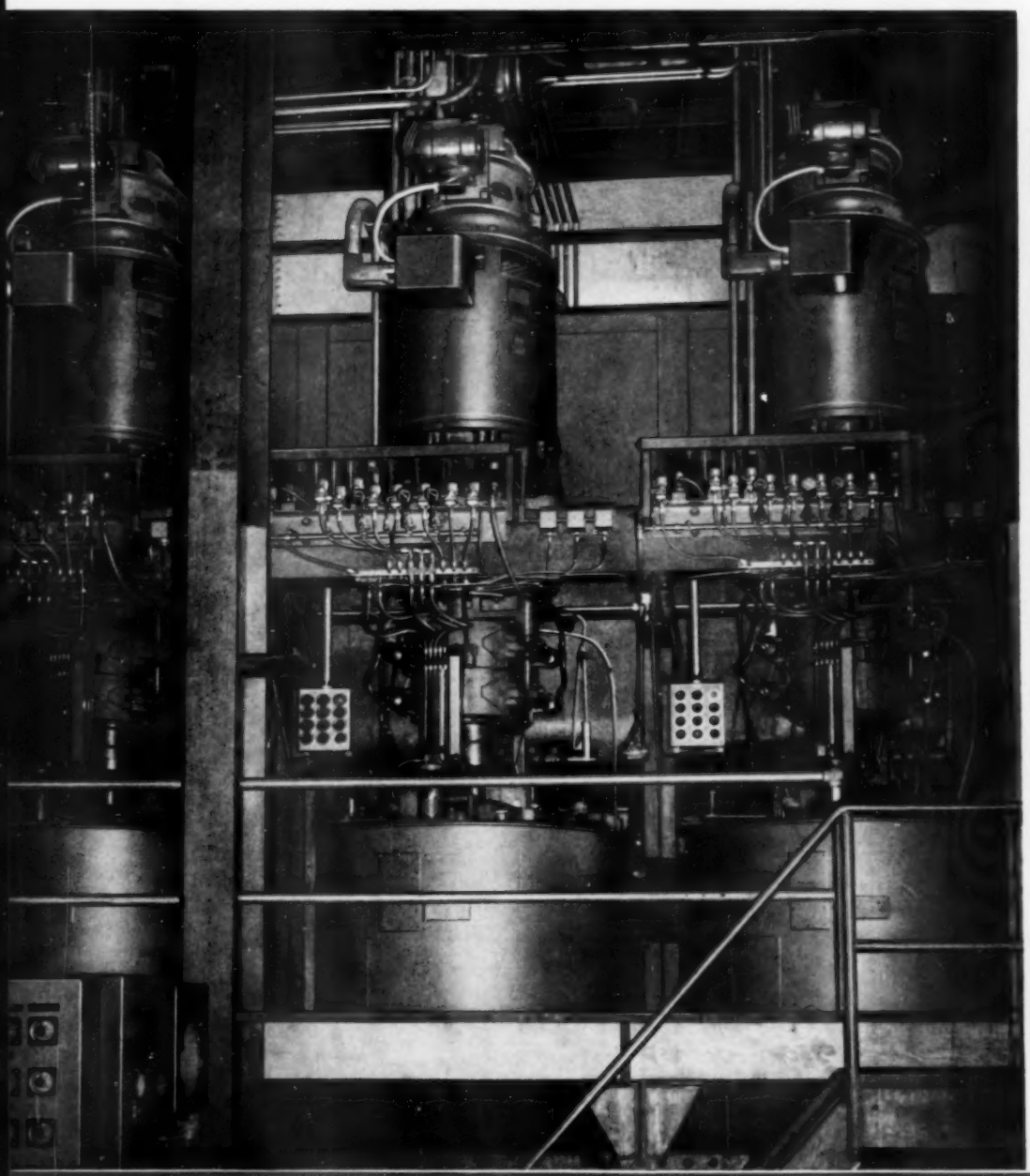
"What's New?" AT RIO LLANO, PUERTO RICO

The three 48" x 30" x 7" ROBERTS Electric Drive Centrifugals shown here operate on A and B sugars at Central Rio Llano, Puerto Rico. Special features of this battery of centrifugals include automatic loading speed, automatic washing of the discharger shoe, and an automatic "ready light" to signal when a cycle is completed.

"What's New?" **— CONVENIENT PROCESS TIMER CONTROL! — Provides large, easily read dials and timers which can be easily and precisely adjusted to control the braking and washing phases of the cycle.**

"What's New?" **— SURE WASH CONTROL! — Discharger cannot be actuated until the washing phase of the cycle is completed.**

By just such means are ROBERTS Centrifugals made to deliver the plus performance which is inherent in their sturdy construction. So, sugar men, the world over, recognize "ROBERTS" as the most modern and reliable centrifugals available. The many plus factors which they provide, together with our wide experience in all phases of sugar centrifugation, also can benefit you. To benefit most, consult us during your planning stage.



TO KEEP THE LEAD . . .
WE THINK AHEAD

3021

HAMILTON, OHIO
U. S. A.

THE WESTERN STATES MACHINE COMPANY

Kill problem grasses, roots and all

DOWPON

When problem grasses begin to steal the moisture and soil food from your croplands and pastures, or clog your irrigation ditches, you've got a problem. The *most* effective, yet *least* expensive solution – kill them chemically – with Dowpon*.

Cutting, hoeing, or burning grassy weeds only kills the tops. Deep roots help them recover quickly and soon they're back to do more damage. Dowpon grass killer is sprayed on the top leaves. From there it penetrates the plant's growing system down into the deepest roots, killing the whole plant in one application.

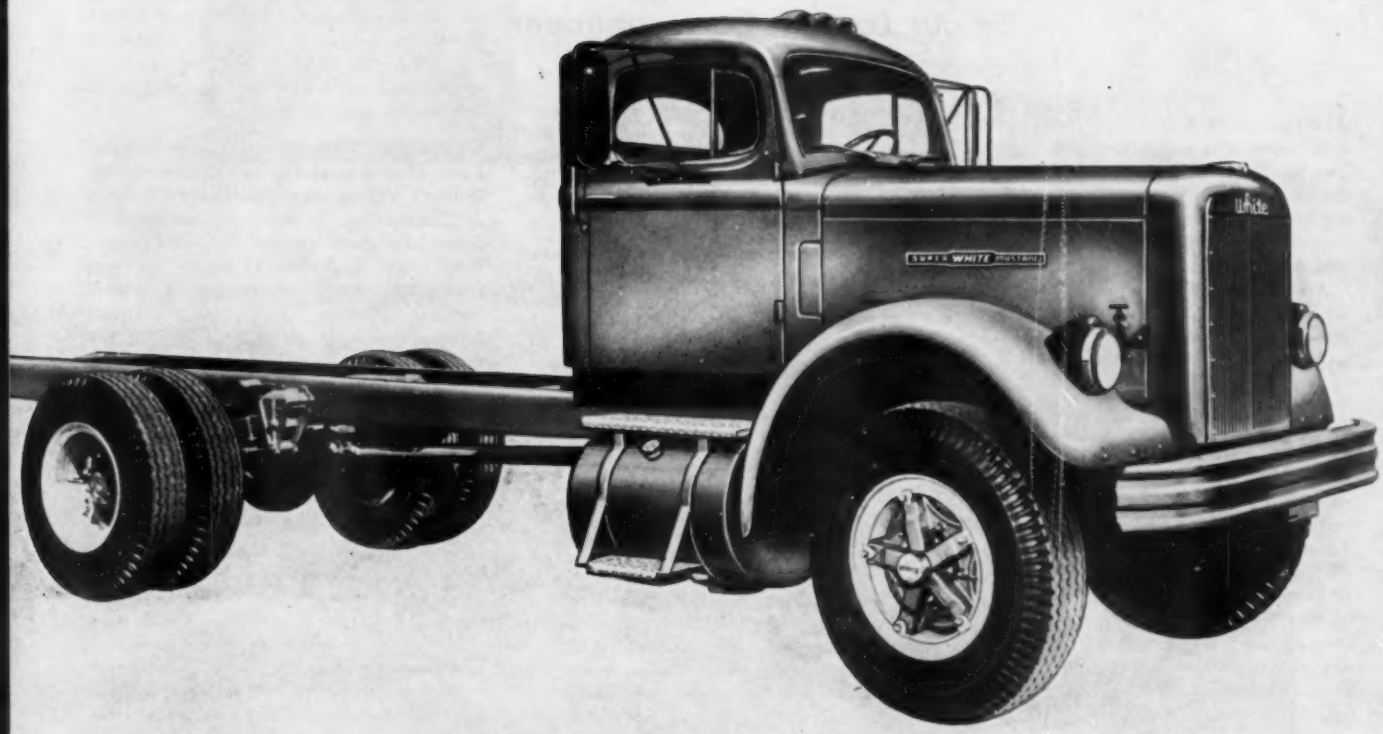
Your Dow distributor has all the information. See him today!

**Trademark of The Dow Chemical Company, U.S.A.*

DOW CHEMICAL INTERNATIONAL LIMITED S.A.

YOU CAN DEPEND ON

DOW



NEW 4200S SERIES — Handles big payloads at lowest possible costs. Available with famed Super Mustang gas or Cummins "C" Series diesel engines for maximum fuel economy.

famous WHITE quality at a NEW LOW PRICE

An all-new concept in economy design! The big new WHITE 4200S Series of trucks and tractors are specially engineered to solve the problem of rising operational costs and to provide maximum payload ability. All at a new low price!

Lighter in weight, rugged throughout, the 4200S chassis has high-strength, heat-treated alloy-steel frame, with quality nut-and-bolt construction, and extra-capacity drive components.

The new WHITE 4200S Series includes the 4200S truck model, 4200TS tractor model and 4264S tandem. All are built to handle the toughest jobs with less down time, lower operating and maintenance costs. And at a lower price than ever!

These new WHITE heavy-duty models are the biggest truck values on the market. Designed *to your exact operating requirements.*

THE WHITE MOTOR COMPANY
EXPORT DIVISION
CLEVELAND 1, OHIO

WORLD LEADER IN HEAVY DUTY TRUCKS

WHITE

EUROPEAN

News & Notes

By our London Correspondent

BRITISH sugar beet delivery was reported to be proceeding satisfactorily early October. The first factory tests showed that substantial improvement was still taking place in the beet but they supported the general view that the season's crop will not compare with that for 1960/61.

Averages of field and factory test results for the period August 19 to October 9, 1961, and for the corresponding 1960 period, can be presented thus:

	Root weight Gr.	Sugar content Percent	Sugar in root Gr.
1961	551.7	14.65	81.6
1960	656.0	14.35	94.4

Analyzing its reports from farmers, *The Times* calculated the expected average yield of sugar beet in Britain on October 1 at 12.13 tons an acre, comparing with 13.2 tons on October 1, 1960, and with the 10-year average for this date of 11.2 tons. A good deal of virus yellow was reported but, nevertheless the crop looked reasonably promising.

GREECE has opened her first sugar refinery. This is at Larissa and is the first of three, each with a production capacity of 28,000 tons a year, whereby it is planned to make the country self-sufficient in this respect.

The opening was on schedule and is the initial result of an agreement reached last year between the Greek Government and the Agricultural Bank of Greece to establish a strong national sugar beet industry through a new commercial corporation termed "The Hellenic Sugar Industry." The other factories, at Thessaloniki and Serrai, are not due for completion for another one to two years. The combined effect of the three, it is estimated, will be a saving of some £4.5 million a year in foreign exchange for sugar imports, plus about another million from fodder and molasses imports which will be replaced by the by-products of home sugar beet processing.

CONSIDERABLY more sugar will be used in the soft drinks sold in Britain if, as is proposed by the Minister of Agriculture, Fisheries and Food, the existing Food Standards (Soft Drinks) Order, 1953, is revoked in the near future and replaced by new regulations.

For soft drinks for consumption without dilution it is proposed that the minimum quantity of added sugar per 10 gallons shall be 4½ lb against 1⅛ lb in the 1953 order; for soft drinks for consumption after dilution the amount per 10 gallons will be 22½ instead of 7½ lb.

The recommendation of the Food Standards Committee report on soft drinks published in 1959, that the use of saccharin should be prohibited, has not been adopted, but it is at least proposed to reduce the permitted amounts very considerably.

It was also recommended that nutritional claims based on the carbohydrate content of some soft drinks should be prohibited. This has not been accepted but the Food Standards Committee is being asked to consider the whole question of energy claims as part of its review of the Labelling of Food Order.

FARM tractors with hydraulic drive were visualized in an interesting paper—"Hydraulic Transmissions in Agriculture"—at the recent meeting of the British Association for the Advancement of Science. The author was H. J. Nelson, senior scientific officer of the National Institute of Agricultural Engineering at Silsoe, Bedfordshire, a body which as long ago as 1954 built a tractor with such a drive and showed its performance to compare very favorably with its mechanical drive counterpart.

Since then manufacturers of hydraulic drives have installed them in various types of tractors and the position today, Mr. Nelson contends, is that the makers are convinced there are no great technical problems in such applications but they all recognize the main difficulty to be that of first cost.

Such transmissions now cost two to three times that of the mechanical drive components they would replace. He believes, however, that considering their relative scales of production there is evidently great scope for price reduction of hydraulic drive and motors if their output were increased.

As this is now in fact rising to meet demands from a widening range of applications where first cost is not as restrictive, he suggests that possibly in only a few years such drives and motors will be available to tractor manufacturers at competitive prices. Once produced in quantities adequate for the tractor market, he feels price will cease to be a problem and the hydraulic drive system will be in a position to establish itself on grounds of performance and convenience.

Speculating on what effect this would have on the design of power units for farm tractors, it is argued that with the transmission providing all the flexibility required, the field will be open for introducing engines of less conventional design by present day standards. Gas turbines and other rotary types become possibilities.

Whatever the future for hydrostatic transmission in agricultural tractors may be, it is felt that investment in hydraulic equipment by the farming industry will continue to increase, and the scope for this, Mr. Nelson believes, is very great.

GOOD progress is reported by the Standard Bank of South Africa, London, on the Kilombero Valley sugar development scheme in Tanganyika. In some 15 months 2,000 acres have been cleared and transformed from dense bush into an estate with fine cane, canals, overhead irrigation, and a small township. The bank is one of the international consortium which is financing this major scheme (see SUGAR Y AZUCAR, March and August, 1961) under the auspices of the International Finance Corporation and the Colonial Development Corporation in the UK.

By next August 1, 650 acres of cane will be ready for commercial use, though tests are still proceeding in the parent nurseries to determine the best yielding types. Two pumps are in operation bringing water for irrigation from the Great Ruaha River and canals are supplying water over a wide area.

Machinery transport problems have been overcome by building a 75-yard long Bailey bridge over this river and factory plant has recently been arriving daily for installation. Next year refined sugar yield is estimated to reach 2,000 tons, jumping to 20,000 tons in 1963 and to 30,000 tons in 1964. The Mikumi railhead, some 30 miles from the estate, has been linked up, sidings installed, and rebuilding the main road will be completed by next year.

Equally good progress is reported on the welfare side, with the European staff in two long avenues of houses of modern design and equipped with electricity and the labor lines in concrete and brick houses. An African social center and a cinema are now nearing completion.

The accounts of **Sir J. L. Hulett & Sons Ltd.** for the year ended April 30, 1961, were summarized in the last issue of this journal. There follow now some points relating to sugar from the lengthy review of the chairman—G. M. Hulett:

The 1960/61 season was a most significant one for three very important reasons. First, production control was introduced in South Africa to relate it to market requirements and total sugar was restricted to 994,000 tons against an available 1,179,000 tons. All cane quotas were reduced, leaving 1,607,478 tons standing in the fields, equivalent to some 185,000 tons of sugar.

The second was the long overdue sugar price increase. This was substantially less

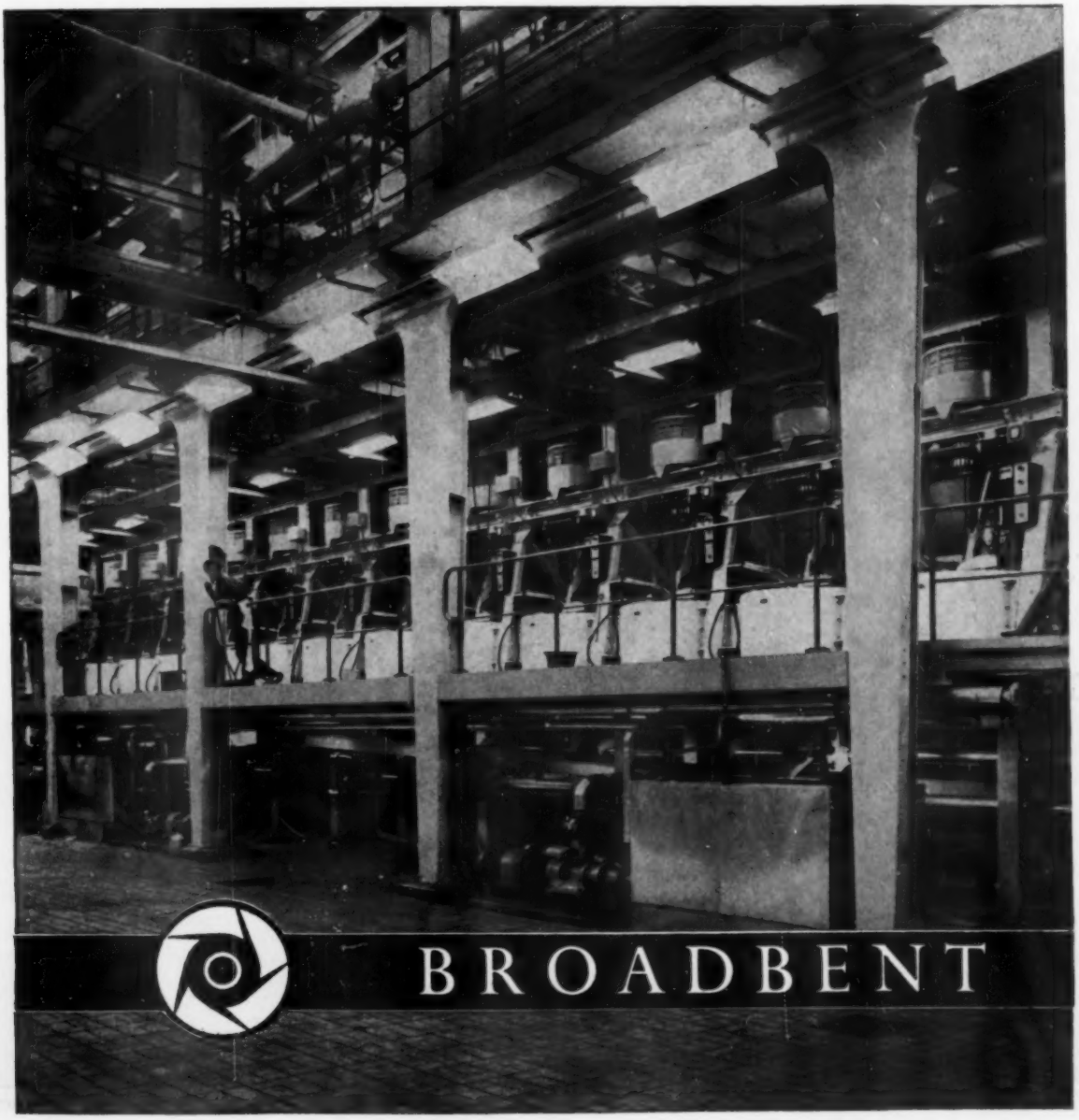
A battery of twelve 48″ x 30″ 1500 R.P.M. synchronous centrifugals installed in 1960 at the Friesch—Groningche sugar factory, Holland.

We recently had the pleasure of receiving a further order for twelve 48″ automatic centrifugals for the white sugar production.

THOMAS BROADBENT & SONS LIMITED.

CENTRAL IRONWORKS HUDDERSFIELD ENGLAND.

TELEPHONE 5520-5 TELEGRAMS 'BROADBENT' HUDDERSFIELD



than the industry considered necessary for its sound economy, however, and about half the benefits of the increase had already been lost through the various increased costs and lower export prices.

As to the third important event, South Africa's withdrawal from the Commonwealth, he was not prepared to take too pessimistic a view about its effects on the company, feeling that these may be offset to some degree by group interests outside the Republic.

Group sugar production in Natal and Zululand was 327,009 tons in 1960/61 against 308,186 tons in 1959/60; Mhulme (Swaziland) Sugar Co., in its first full year of operation, produced 43,167 tons of sugar from 405,899 tons of cane, of which 307,183 tons came from company estates; and the Rhodesian subsidiary—Triangle Ltd.—again increased its output, to 21,439 tons of raw sugar from 202,401 tons of cane, of which 183,021 tons came from company estates. Group production was thus 391,615 tons, representing 36.7% of the total for South Africa, Swaziland and the Rhodesias.

The mills of the holding company at Darnall, Amatikulu and Felixton in Natal crushed 2,101,956 tons of cane during the season to produce 243,027 tons of sugar. Cane tonnage cut from company estates was 300,810 from 7,671 acres, an average of 39.21 tons an acre. Sucrose averaged 5.4 tons an acre.

Sugar production from the Empangeni mill of Zululand Sugar Millers & Planters Ltd. was 83,981 tons against 60,127 tons in 1959/60 and cane tonnage crushed was 727,-013. Further large scale mill alterations and extensions have been carried out to increase factory capacity.

Continued progress has been made by Triangle Ltd. and the expansion programme is being carried forward as planned. There will be some 16,000 acres under cane when this is completed. It is hoped that the new 125 tons/hour cane crushing mill will be ready for operation by August 1962.

The Rossburgh refinery of Huletts South African Refineries Ltd. marketed 268,007 tons of refined sugar in South Africa during the year under review and disposed of 14,207 tons in external markets. The season's total melt was 293,023 tons.

Shareholders of **Caroni Ltd.,** the West Indian planters and sugar manufacturing company controlled by Tate & Lyle Investments, have had a pleasant surprise. Not only are net profits for the year ended June 30, 1961, substantially increased, but the distribution is raised and a one-for-scrip issue is proposed, involving the capitalization of £700,000 of reserves.

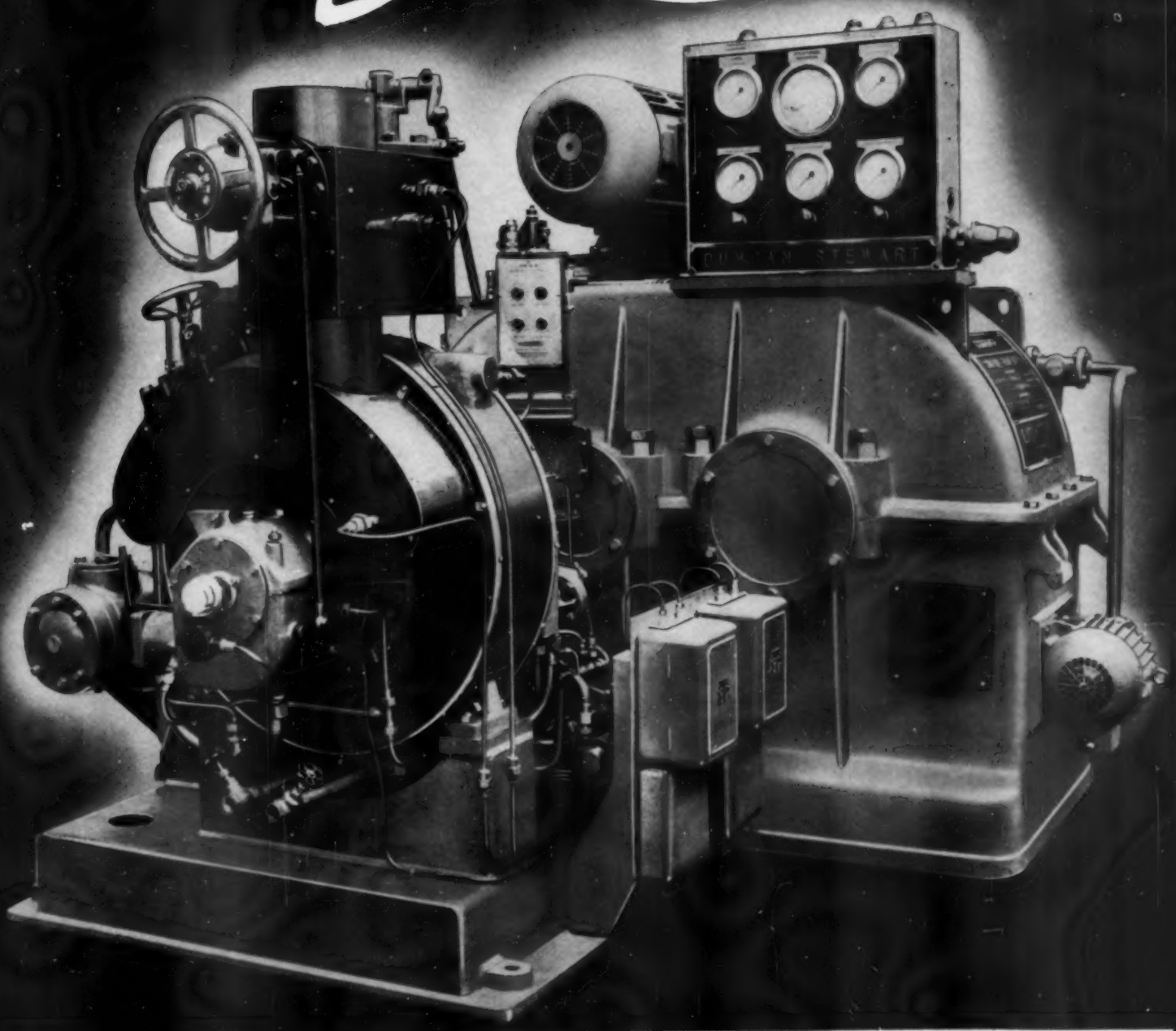
Group Trading profit is raised to £860,017 *(from £489,923 in 1959/60)* and, after charging depreciation of £150,794 *(£148,-769)* and allowing £349,479 *(235,634)* for taxation, group net profit is £487,879 *(£249,-486)*. A sum of £460,135 *(nil)* goes to general reserve and £271,898 *(£390,521)* is carried forward. While the ordinary dividend is maintained at 3½d (14-7/12%), less tax, the tax-free capital payment is raised to 2d (8-1/3%) from 1d (4-1/6%).

As from October 1 **Tate & Lyle Ltd.** has become purely a holding company. This follows the approval given to the scheme of arrangement for the regrouping with the company of Tate & Lyle Investments, Silvertown Services Ltd., and their respective subsidiaries. From the same date the whole of the company's refining undertaking has been taken over by a new wholly owned subsidiary—Tate & Lyle Refineries Ltd.

The chairman of **The Anglo-Ceylon & General Estates Ltd.**—Mr. F. W. Douse—said at the annual meeting of the company in London late September that, in Mauritius, a reasonably good tonnage of cane is expected to be harvested but weather conditions had to that time not been so favorable as could be wished and it was not easy to estimate what the actual outturn of sugar will be. Sucrose content of cane, he added, was abnormally low at the commencement of the crop but it later showed some signs of improvement.

JOHN M HENDERSON & CO LIMITED KINGS WORKS ABERDEEN Tel: CENtral 24262 (3 lines) Grams: Cranes Aberdeen
P4651

MILL TURBINE DRIVES by *Duncan Stewart*



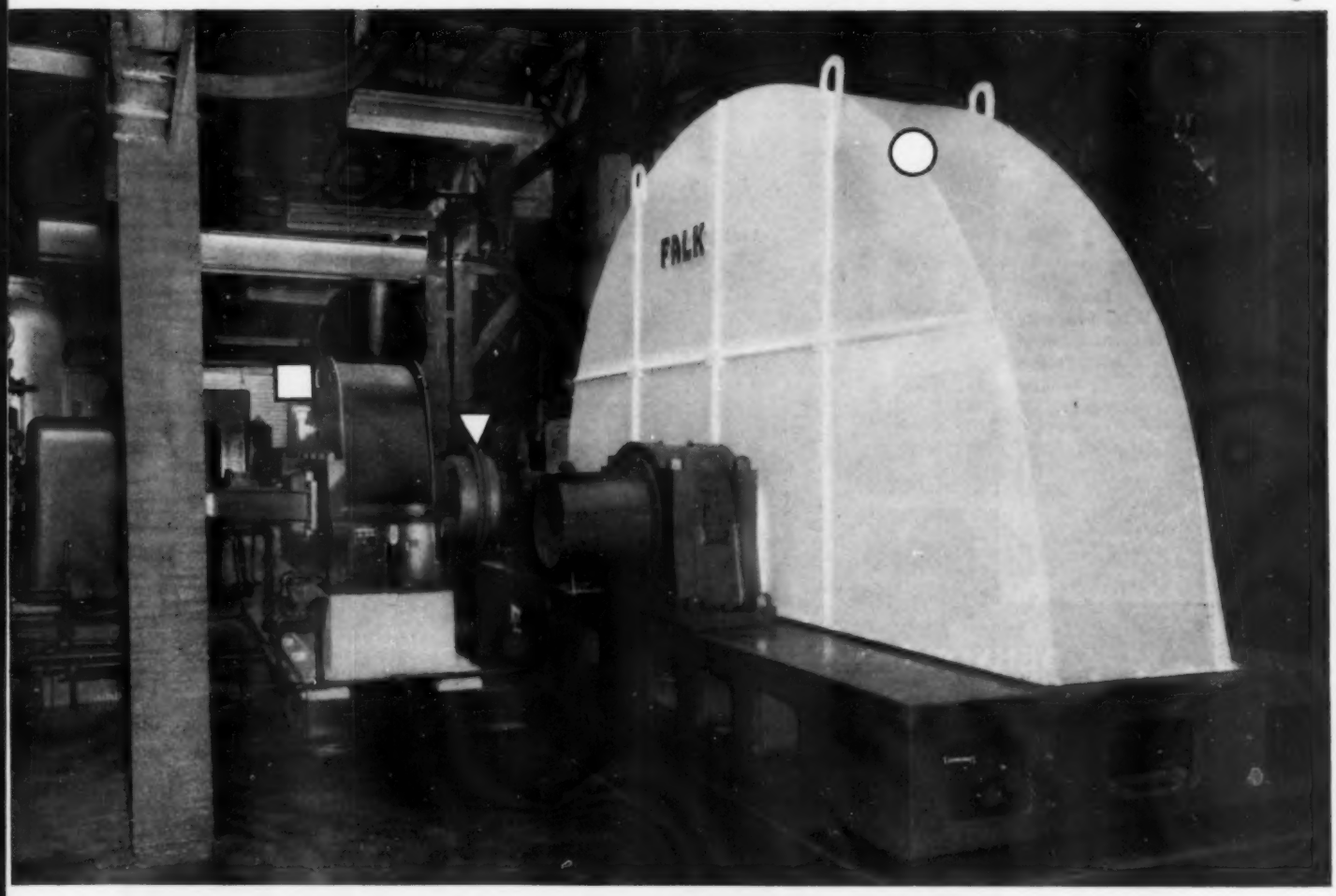
500 b.h.p. GEARED STEAM TURBINE DRIVE
Steam conditions: 350 15 p.s.i.g., 100 F Superheat
Steam consumption: full-load, 22.3 lb/b.h.p hour
Speeds: Turbine 550 r.p.m.
Output from Gearbox 100 r.p.m.

DUNCAN STEWART & CO. LTD.
PARK GATE · GLASGOW, C.3.

Cables "Stewart Glasgow"
Telex No. 77607

269/D.S.

UNITED NORIT SALES CORPORATION LTD-AMSTERDAM-HOLLAND



Conversion to turbines marches on—aided by FALK Helical Gear Drives

Just before the 1958 grinding season, the Myrtle Grove Factory of A. Wilbert's Sons at Plaquemine, Louisiana, installed a 1500 hp, 4000 rpm turbine to replace the steam engine which had powered their three 3-roll mills. Conversion was done under the direction of E. L. Dennis Engineering Company, New Orleans, Louisiana.

A Falk high speed drive, Steelflex couplings and a Falk herringbone gear drive (with bedplate, bearings and enclosure) give a total reduction ratio of 62.5:1, with 64 output rpm. Two mill gear sets were retained to provide final reduction to roll speed. Net result: substantially increased grinding capacity—with further capacity available!

If you are planning a conversion or a new mill, you will need precision helical gearing of highest mechanical efficiency to attain maximum rated capacity of your turbine. All Falk gear drives—from large gearing to the smallest shaft mounted drive—develop 98½% efficiency per gear mesh, under full load. And all have the best combination of high pressure angle and extra-depth teeth—a Falk feature that provides maximum load-carrying capacity.

Because the performance of your equipment depends on the gears you use, it will pay to ask your mill builder, consulting engineer or equipment supplier to consult Falk. Our engineers are qualified by skill and experience to specify and produce the exact gears that are best for your specific application.

THE FALK CORPORATION, MILWAUKEE 1, WIS.

MANUFACTURERS OF QUALITY GEAR DRIVES AND FLEXIBLE SHAFT COUPLINGS

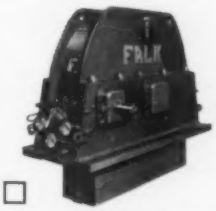
Representatives in most principal cities

FALK

...a good name in industry

Typical Falk products for steam-turbine sugar mill drives

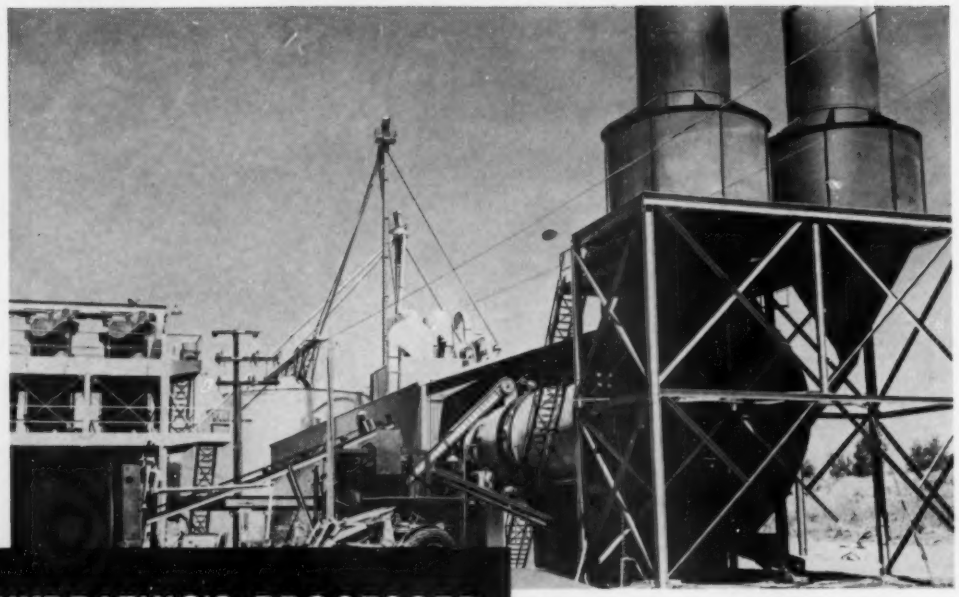
○ GEARS Herringbone or Single Helical



□ HIGH SPEED DRIVES

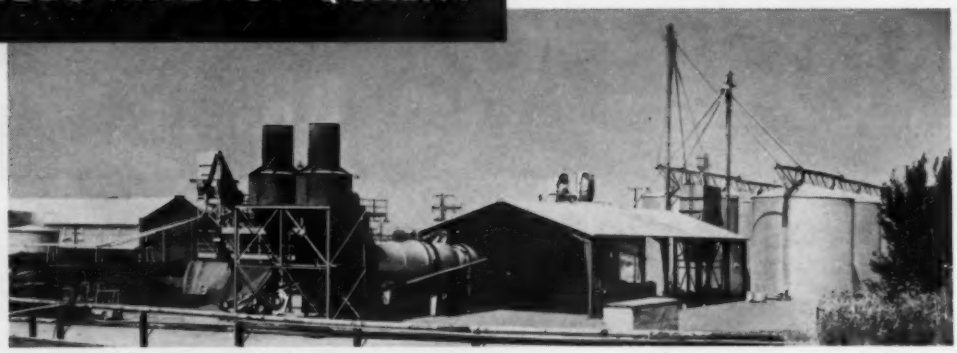
▽ STEELFLEX COUPLINGS

FALK and STEELFLEX are registered trademarks



Four of eight SRB-60 Dewatering Presses and System of Conveyors Feeding S-R Dryer

DELTA DEHYDRATING'S PROCESSED STOCK FEEDS RATE TOP QUALITY



General Plant View, Delta Dehydrating Corp.

Beet pulp, forage crops, cannery by-products and the like are superior in feeding quality as processed by Delta Dehydrating Corp. using S-R direct heat dehydration. Delta selected S-R dewatering presses and matching dryer for processing the beet pulp from the American Crystal Sugar factory at Clarksburg, California.

Eight of the S-R Model SRB-60 presses and one 10′-6″x 48′-0″ S-R dryer process the pulp from 2200 to 2500 tons of beets per day. The pellet yield is 135 to 170 tons per day.

In the off-season for beets, the dryer operates around the clock on alfalfa and other forage crops, producing six to eight tons per hour of superior quality pelletized stock feed. Attention, upkeep, and operating cost are nominal.

The **difference** is in **design.** For multi-purpose dehydrators see Stearns-Roger.

Stearns-Roger

THE STEARNS-ROGER MFG. CO. • DENVER, COLORADO

P. O. BOX 5888 • DENVER 17, COLORADO

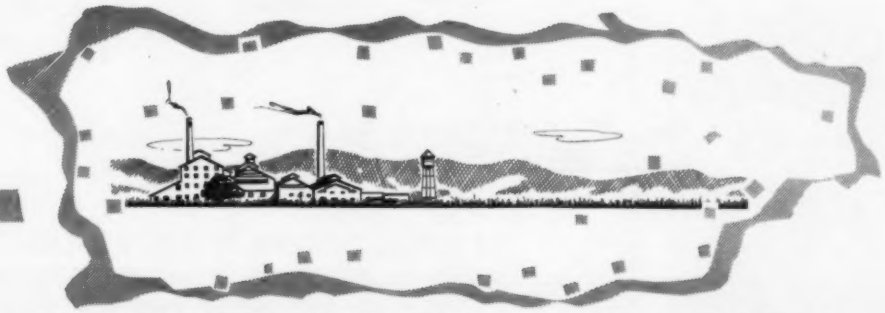
SHELL

SERVING the PUERTO RICAN SUGAR INDUSTRY

- In the factory
- In the field

WITH SPECIALIZED PRODUCTS FOR SPECIALIZED JOBS

- Lubricants and rust preventives for industrial, automotive and agricultural equipment.
- Fuels for boilers, tractors and other automotive equipment.
- Technical aldrin, dieldrin and endrin for the formulation of industrial and agricultural insecticides.
- D-D® and Nemagon® Soil Fumigants



® Registered trade mark of the Shell Chemical Company, a division of Shell Oil Company

TRUSTWORTHY QUALITY AND SERVICE

SHELL

THE SHELL COMPANY (PUERTO RICO) LIMITED

SAN JUAN—PONCE

GENECO

Serving the Puerto Rican Sugar Industry

IN THE FIELD... IN THE MILL

IN SALES: *Specialized products for any job:*
Crawler tractors, wheel tractors agricultural equipments
Plows, harrows, irrigation systems, cane harversters, cane loaders
Motor graders, cranes, engines, electric sets, compressors, pumps, mixers
Trucks, trailers, lift trucks

IN PARTS: *Expensive down-time is minimized when any industry depend on Geneco's million dollar parts stock consisting of 30,000 different parts available at our Parts Department.*

IN SERVICE: *The best service facilities in the Caribbean.*

General Equipment Corporation

VENTAS • REPUESTOS • SERVICIO

CARRETERA ESTATAL NUM. 2-KM. 3.7

TELEFONO 782-4100 APARTADO 3588

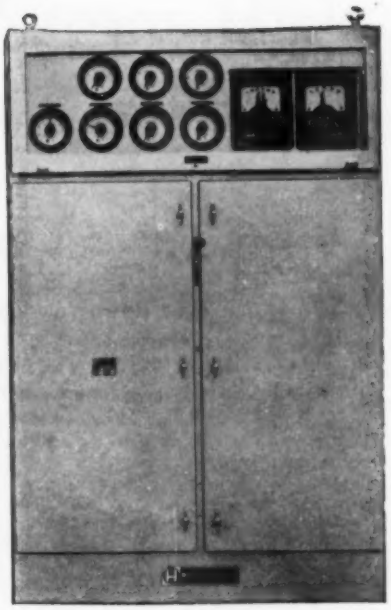
SAN JUAN 17, PUERTO RICO

from PCW

PUSH BUTTON
OPERATING STATION

MANUAL
SEMI-AUTOMATIC
FULLY AUTOMATIC
CONTROLS ON THE
SAME CENTRIFUGAL

AUTOMATIC RECYCLING
NON-STOP CENTRIFUGALS

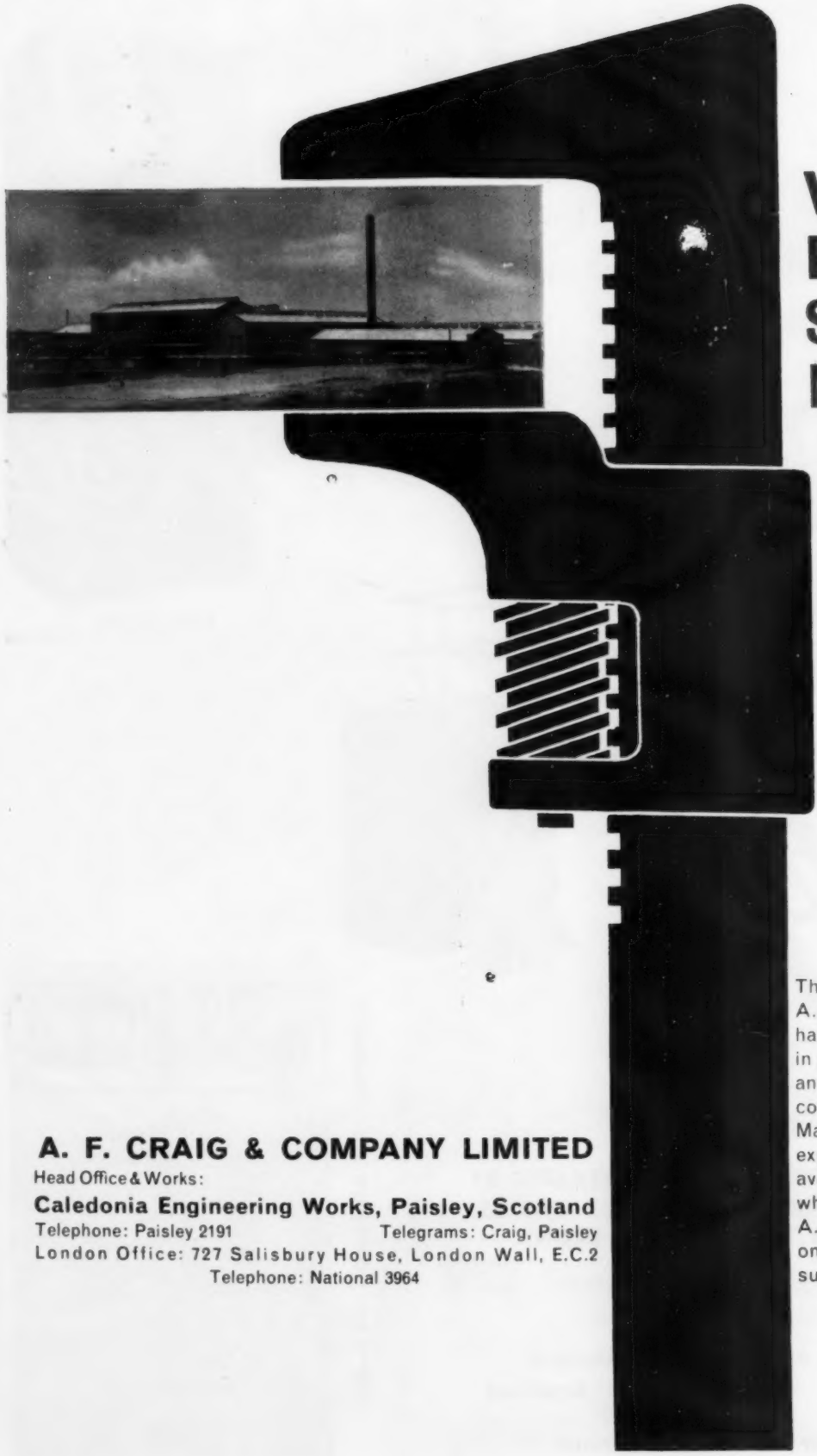


ELECTRICAL CONTROL CABINET

A NEAT, CLEAN DESIGN IS ACCENTUATED BY THE COMPLETE ABSENCE OF PIPES, CABLES, ETC., ACROSS THE WORKING FRONT.

Pott Cassels and Williamson Limited
Motherwell Scotland

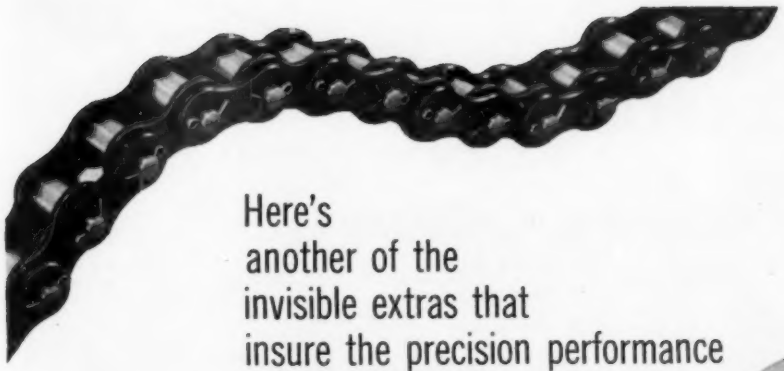
A MEMBER OF THE MIRRLEES GROUP



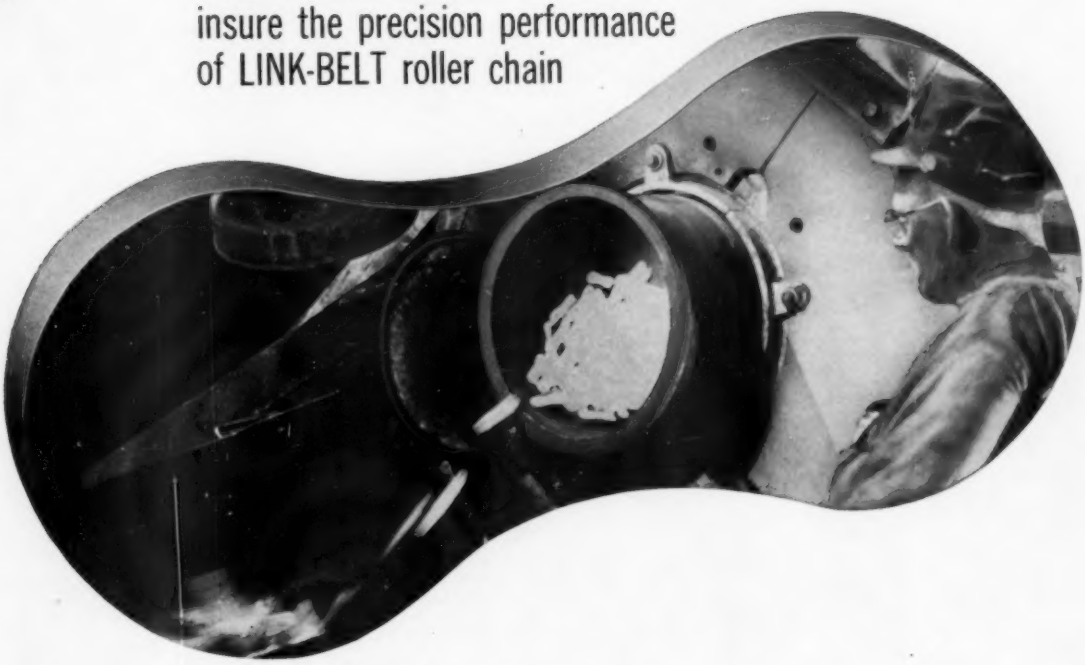
WE BUILD SUGAR MILLS

Throughout the world A. F. Craig & Co. Limited have had experience in planning, designing and manufacturing complete Sugar Mills. Many years of experience are available to you when consulting A. F. Craig & Co. Limited on any facet of sugar machinery.

A. F. CRAIG & COMPANY LIMITED
Head Office & Works:
Caledonia Engineering Works, Paisley, Scotland
Telephone: Paisley 2191 Telegrams: Craig, Paisley
London Office: 727 Salisbury House, London Wall, E.C.2
Telephone: National 3964



Here's
another of the
invisible extras that
insure the precision performance
of LINK-BELT roller chain

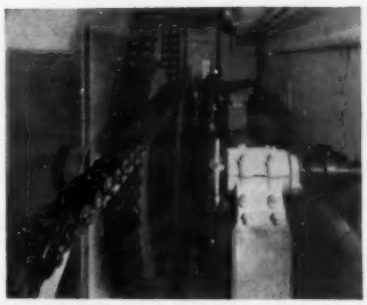


Painstaking precision of heat-treat control gives you

uniform strength in every link

To produce roller chain of utmost uniformity, Link-Belt maintains exacting control of all heat-treating processes. With equipment and instrumentation exactly tailored to the need, all processes are carefully adjusted to suit the characteristics of each heat and analysis of steel. Result: roller chain of uniform strength *well above accepted standards*. Chain that absorbs shock loads, delivers full power under continuous heavy going.

Precise heat-treat control is one of many *invisible extras* that contribute to the greater strength and endurance of Link-Belt roller chain. Others include prestressing, pitch-hole preparation, shot-peening. These features—plus painstaking precision and inspection in every step of manufacture—assure you of chain that can easily cope with today's heavy loads and high speeds.



Single and double strand Link-Belt roller chains combine to provide dependable, positive power transmission at this installation.

For engineering assistance in applying industry's preferred roller chain, contact your Link-Belt representative. Or write us direct.

LINK-BELT COMPANY: Engineers • Manufacturers • Exporters of Machinery for Handling Materials and Transmitting Power • Established 1875. **EXPORT DIVISION:** Dept. 1261-SYA, 233 Broadway, New York 7, U.S.A., Cable Address: Link-Belt—New York • Australia, Marrickville (Sydney) • Brazil, Sao Paulo • Canada, Scarboro (Toronto) • South Africa, Springs • Switzerland, Geneva. Representatives Throughout the World.

LINK-BELT

ROLLER CHAINS AND SPROCKETS

vacuum without moving parts

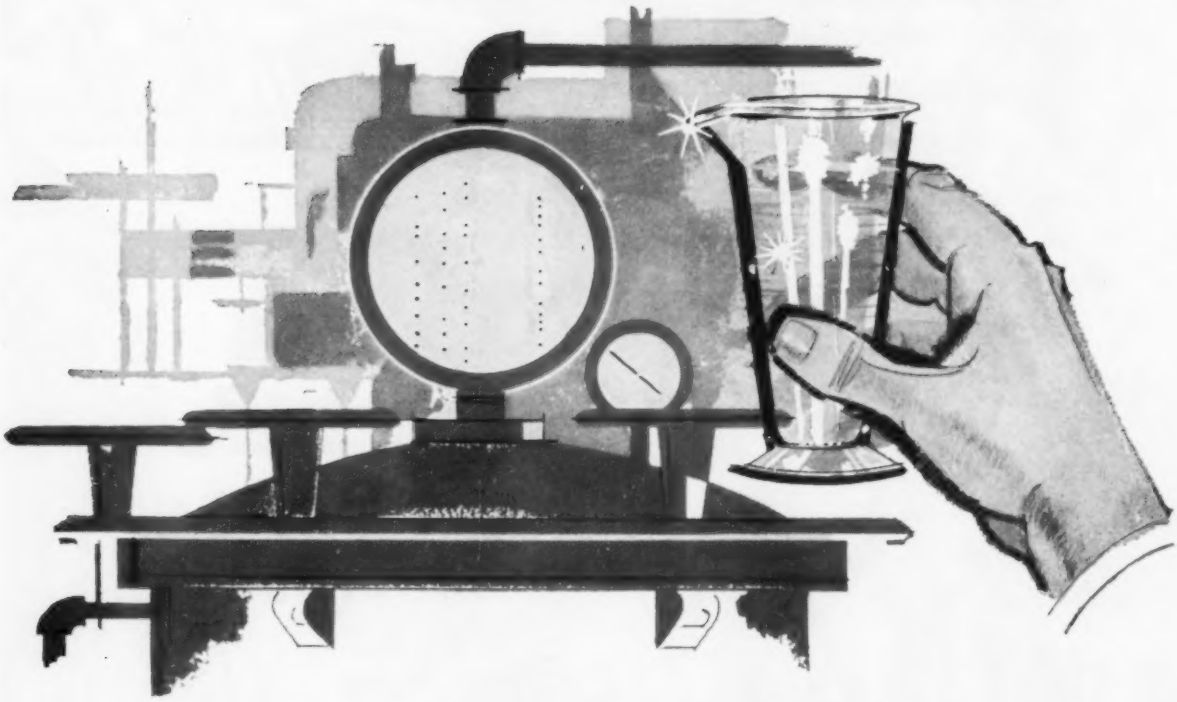
For Factories with suitable water conditions Mirrlees, Barometric Condensers, having no mechanically moving parts, produce vacuum with trouble-free operation and little or no maintenance.

Of the tree types of Barometric Condensers manufactured by Mirrlees, the Multi-Jet Spray is shown installed at Pettaivaytalai. The other types are Multi-Jet and Counter Current Tray.

THE MIRRLEES WATSON COMPANY LIMITED

HEAD OFFICE AND WORKS—45 Scotland Street, Glasgow Scotland. CABLES: "Mirrlees Glasgow"
LONDON OFFICE 38 Grosvenor Gardens, S.W.1. CABLES: "Mirrlees Sowest London."

New Standards of Filtration Control



made possible by **EAGLE-PICHER** *filter aids!*

here's why:

Eagle-Picher's vast Nevada operations have made newly available *several million tons* of extremely high quality filter aid diatomite.

Exact grades are pin-pointed by "Strato-Test" field classification. Exceptional purity is ensured from the start.

A complete range of grades of filter aids are produced by Eagle-Picher in the world's newest, most efficient diatomite processing plant.

With this remarkable "on-grade" uniformity, you get precise control of clarity, at controlled flow rates.

Non-organic, Eagle-Picher filter aids are sterilized . . . are chemically and physically inert. Cannot alter or impart flavor.

You get "sharp" filtration that removes all thermophiles and unwanted solids in the colloidal and submicroscopic range.

The unmatched purity of Eagle-Picher Filter Aids results in a lower wet density, providing greater surface coverage. Users report substantial production economies.

Testing Samples, Consultant Services— yours for the asking. Write, wire or call us at any time.

EAGLE EP PICHER

Since 1843

EAGLE-PICHER

The Eagle-Picher Company
Dept. S-1261, Cincinnati 1, Ohio

Mail Coupon for complete technical data and sample
The Eagle-Picher Co., Dept. S-1261 Cincinnati 1, Ohio

☐ Please send additional information
☐ Please submit sample_____ (size needed)
Type Product to be filtered

Filter-Aid to be used for:
☐ Primary filtering ☐ Pre-coat
☐ High clarity or polishing ☐ Admixture

NAME_____ TITLE_____

COMPANY_____

STREET_____ CITY_____ STATE_____

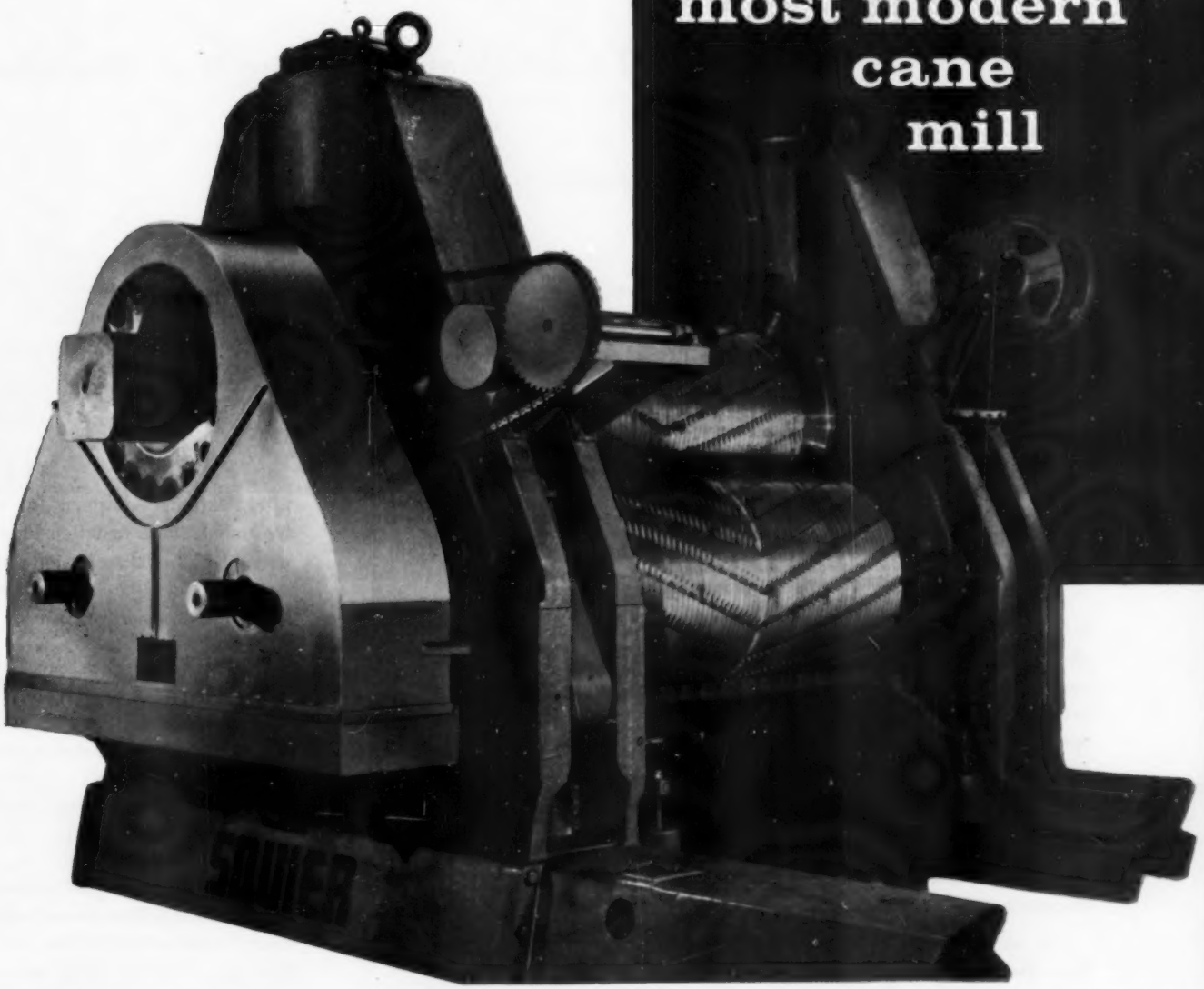
Higher Cash Pay-Offs are the *sugar coating* of bigger and better yields! Profit more now from *your* cane through the planned management and vital application of a scientifically balanced, soil-enriching fertilizer . . . Armour BIG CROP! It's a sound investment that helps push yields and boost raw value for extra *sweet* profits.

Be sure to use Armour BIG CROP!

ARMOUR
AGRICULTURAL CHEMICAL COMPANY

NEW ORLEANS, LA. • SAN JUAN, P.R.

exclusive SQUIER features give you world's most modern cane mill



- Vertical Removal of All Rolls
- Free Floating Top Roll
- Smooth Lines for Cleanliness
- Housing Integral with Bedplate
- Coarse Grained Rolls
- Ground & Polished Shaft Journals
- Large Diameter Juice Rings & Flanges
- Full Involute, Long Tooth Crown Wheels
- Self-Contained Hydraulic Cartridge
- Large Diameter Hydraulic Pistons
- Fully Enclosed Top Roll Bearing
- Built-In Spare Bottom Roll Bearings
- Bearings are Water-Cooled
- Bearings are Force-Lubricated
- Convenient Turnbeam Adjustment
- Visual Inspection of Turnplate
- Narrow Turnplate
- Turnplate Removable Thru Side of Housing
- Hydraulic Roll Adjusters
- Deep Stainless Steel Juice Troughs

SQUIER is uniquely well-equipped to supply your needs for everything from replacement equipment to a major modernization program, or a complete new factory. You can rely on SQUIER's world-wide reputation. For full information, request Bulletin 1000.

THE SQUIER CORP.
ENGINEERS AND MANUFACTURERS
BUFFALO, NEW YORK, U.S.A.

Solution to the Problem of Chemical Conditioning in Cane Mud Filtration

. . . Treat Mud Only if Necessary

The story of the EimcoBelt filter station at Central Aguirre brings into clear focus important technological advances that have been made in cane mud filtration in recent years.

Developments such as the Eimco cane mud removal process with the EimcoBelt filter have largely overcome the traditional troubles sugar men have had with vacuum filters for removing muds from sugar liquors.

The EimcoBelt filter station can be installed for operation with or without chemical pre-treatment of the mud to assist cake discharge. In many cane sugar producing areas EimcoBelt filters are operating successfully with no mud conditioning other than mixing and bagacillo addition. In other areas, chemical flocculation is advisable, particularly in plants where cane is not washed prior to grinding or where dilute mud conditions are encountered.

In all sugar producing areas, the EimcoBelt filter station serves as an exceptionally flexible facility for increasing the mud removal capacity of the factory when bad mud conditions occur. With chemical pre-treatment, filtration rate can be increased to three times the rate of screen filters, thus making available a reserve capacity that completely eliminates all need for processing slowdowns or clarifier dumping, even operating under the worst mud conditions.

Filtration rate with high chemical pre-treatment is limited by increased percent sucrose in the discharged cake and by high chemical costs. These limitations disappear when the EimcoBelt filter is operated at about 1.5 times the rate of screen filters. At this optimum rate, cake sucrose is about the same as sucrose percentage in cake from screen filters and so little chemicals are required that chemical costs average less than 0.5 cents per ton of mud processed.

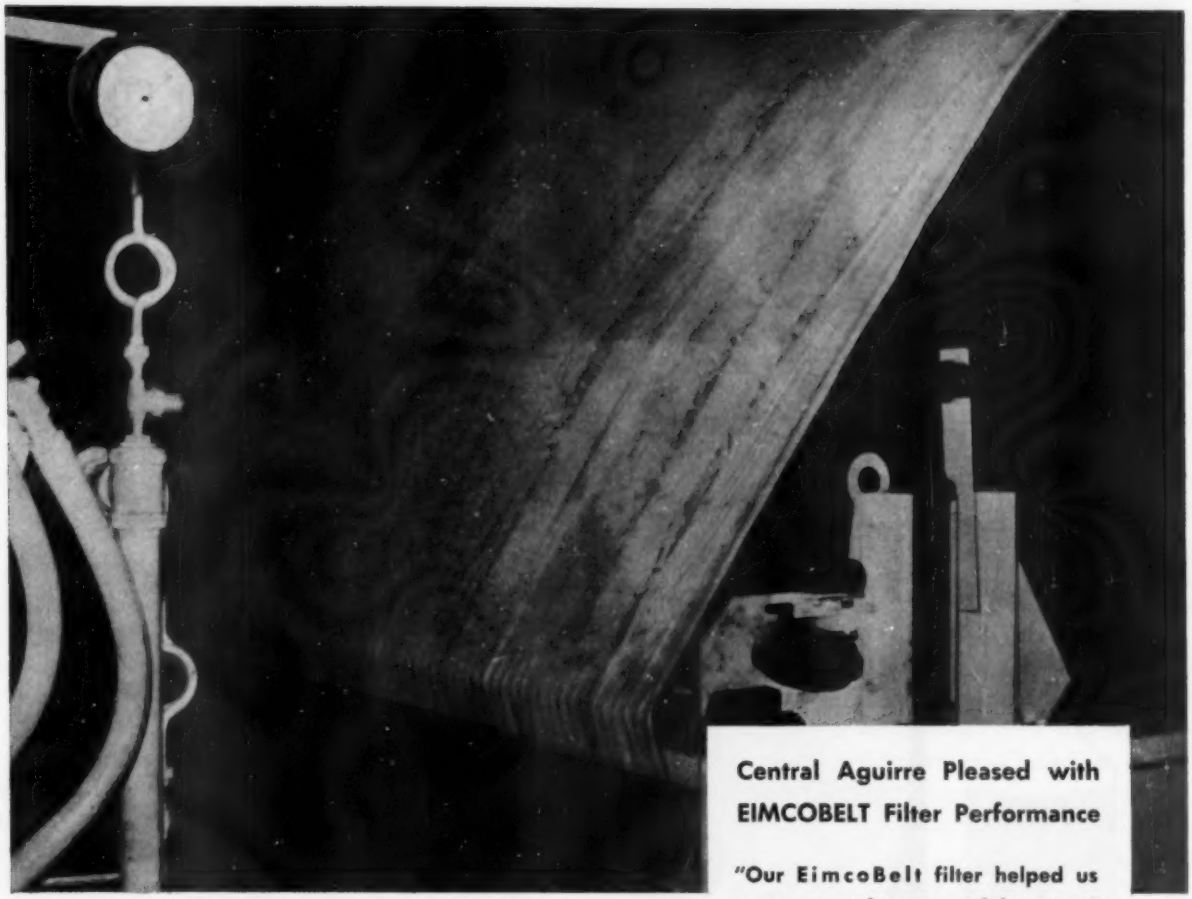
The vagaries of cane mud filtration being what they are, it seems wholly practical to have chemical pre-treatment facilities available in most cane mud removal operations for use when needed. Certainly, it would seem unwise to be committed to chemical treatment if it is not required. And chemical treatment is not required, with the EimcoBelt filter station, in many cane producing areas, and only intermittently in others.

With or without chemical treatment, this filter produces a clear filtrate that is always acceptable for evaporation, containing solids averaging only 0.1% by volume — constantly, throughout the life of the cloth belt. Bagacillo requirements average 5%, dry solids basis. Filter cake is low in moisture and Pol. Dilution of juice going to evaporators is negligible. Cloth lasts three months or more and costs less than 0.2 cents per ton of mud processed.

The above operating data are based on numerous EimcoBelt filter stations operating in the world's sugar producing areas. These units include EimcoBelt filter stations equipped for chemical treatment, those installed for operation without chemical treatment, and standard cane mud filters converted to EimcoBelt filters.

So successful has the EimcoBelt filter proved in all these types of installations that the filter has been a most important factor in establishing cane mud filtration as a science . . . a new science that offers new opportunities for increased processing profits.

On the basis of performance facts, the EimcoBelt filter station offers more value in proportion to your investment than any modernization step you can make. The Eimco representative in your area will be glad to provide operating facts and figures on EimcoBelt filters and Eimco standard mud filters in all parts of the world and advise you on the EimcoBelt filter installation most suitable for your requirement. Or write The Eimco Corporation, Salt Lake City 10, Utah, U.S.A.



Central Aguirre Pleased with EIMCOBELT Filter Performance

"Our EimcoBelt filter helped us wrap up another successful season," according to Mr. Junius Steele, General Superintendent, Central Aguirre Sugar Company, Puerto Rico. Mr. Steele considers the EimcoBelt filter a big step ahead in equipment for cane mud filtration.

NO SLOWDOWN!

with EIMCOBELT Filter at Central Aguirre

The EimcoBelt filter at Central Aguirre Sugar Company in Puerto Rico proved to be so flexible in operation that this producer was able to finish the 1961 campaign with no costly slowdown, despite wide variations in mud conditions.

With the 10-ft diameter by 14-ft EimcoBelt continuous belt filter it was possible, with minimum mud conditioning, to bring mud levels in the clarifier down without reducing the grinding rate or dumping unfiltered mud.

The EimcoBelt filter at Aguirre demonstrated that it is capable of producing at up to three times the rate of screen filters, and at an unprecedented low chemical cost of .3 to .8 cents per ton of cane processed. Filtrate clarities were comparable to clarifier overflow — solids averaged 0.1%, as compared to 8% solids in filtrate from screen filters. Filter medium is still in good condition after three months of operation.

In other cane sugar installations, the EimcoBelt filter has operated with no mud conditioning, filtrate being sent directly to the evaporators. Ask the Eimco representative in your area for facts and figures about EimcoBelt filter performance in cane mud. And write The Eimco Corporation, Salt Lake City 10, Utah, U.S.A. for Bulletin FY-2053.

EIMCO

"Advanced Engineering and Quality Craftsmanship Since 1884"

EimcoBelt is a trademark of The Eimco Corporation. B-839

Photograph of flattened coil elements in coil type vacuum pan belt.
Hydraulic closing can be fitted to either Through or Angle Type Valves. Simple control opens and shuts valve or locks it in either position.
FLETCHER
VACUUM PANS
around the world—
PAN FEATURES
Low Head of Massecuite, Large Downtake and uniform steam distribution giving Rapid Circulation. This ensures well formed crystals, absence of smear and false grain and a minimum of twins and conglomerates.
all welded construction
No flanged joints. Shipped in sections for welding together at site.
Low Head of Massecuite at the capacity level. Pans of cast iron or steel construction.
PRIMARY CHAMBER
SECONDARY CHAMBER
CENTRE FLOW
According to the size of pan, one, two or four inlets are provided, controlled by one valve.
Two diameter calandria pan of fabricated knocked down construction for partial site welding.
WHEN YOU THINK OF SUGAR MACHINERY THINK OF FLETCHER
GEORGE FLETCHER & CO. LIMITED
MASSON WORKS LITCHURCH LANE, DERBY, ENGLAND
Telephone Derby 45817 (4 lines) Telex 37514 Telegrams "Amarilla" Derby Telex
P6536

Theme of 1961 Technologists Meeting

It is a great pleasure to extend a warm welcome to the members of the Puerto Rican Sugar Technologists on the occasion of their 39th Annual Meeting being held at the Caribe-Hilton Hotel in San Juan on December 6th, 7th and 8th.

Our meeting is a promising one and we hope that our program pleases and wins the approval of our guests and members.

From the program on the following pages you will notice that we have some excellent technical papers to be presented by Puerto Rican technologists and also interesting and useful round table discussions on subjects important to both Puerto Rico and other areas.

We are convinced that these meetings, successfully developed for almost four decades, have been of great benefit to those directly or indirectly concerned with the sugar industry and bearing the responsibility to keep it in the outstanding position demanded by our beloved island of Puerto Rico.

According to information published by the Sugar Producers Association the last crop was bigger than the previous one. Cane ground for 1961 was 10,754,-017 tons, an increase of 750,000 tons; and sugar produced amounted to 1,095,751 tons in comparison to 1,006,385 for 1960. The average yield was 10.089% in comparison to 10.063 for 1960.

While these figures are a cause for optimism we must redouble our efforts to achieve even bigger and more efficient production.

Among other favorable factors I would like to mention the following: The new planting incentive program established by the Hon. Secretary for Agriculture Luis Rivera Santos has been a great success; fine new cane varieties developed by our Experimental Station, especially P.R. 1013, P.R. 1016, P.R. 1048 and P.R. 980; wider use of herbicides as a general practice in cultivation; new methods and formulas for fertilizers and field tests on sugar cane growing and ripening before harvesting.

In the manufacturing sector several improvements have been developed such as cane washing equipment; automatic cane conveyors for uniform and continuous feed; milling plant asepsis to reduce sugar losses resulting from inversion, and a great many other improvements.

We are indebted to Hon. Luis Rivera Santos, Secretary for Agriculture; to Mr. Arturo Roque, Agricultural Experiment Station Director; to Dr. Bernardo Capo, Assistant Director and other Government officials who cooperated in developing a program for new varieties as approved in our last Annual General Assembly. The goal of this program is the production of one million seedlings for 1965-66.

We are proud to say that this project is already a fact thanks to the combined efforts of Government and industry, as well as the energetic work of our fellow-members Frank Beale, Chairman of Committee for Varieties; Rafael Martinez, Antonio Roig, Jr., Orlando de Aragon, Jesus M. Guzman and Robert Goodwin. Our hearty congratulations to all and let me ask for persevering action on this project in the future.

We have had important changes in the industrial sector this year. The purchase of Fajardo-Eastern Sugar estates by C. Brewer Puerto Rico, Inc., reported by SUGAR Y AZUCAR about this time last year, was fully confirmed. We extend a hearty welcome to the new member of the Puerto Rican sugar family.

A contract recently signed by the Puerto Rico Land Authority and Central Aguirre Sugar Company to provide technical assistance to operate Central Plazuela proves the mutual confidence and cooperation which prevails in our sugar industry. We take pleasure in congratulating both distinguished members of our Association.

Let me emphasize that one of the main objectives pursued by the Puerto Rican Sugar Technologists is for the widest exchange of technological knowledge with all cane sugar areas in the world. We cordially invite sugar men everywhere in the world to visit us during our Annual Meetings or at any other time, to facilitate an exchange of knowledge and experience.

Finally, I ask to our fellow-members and everybody interested in the sugar industry, to be present at our 39th Annual Meeting.

We anticipate with pleasure your close cooperation. All of you are welcome!

By C. Haeussler, President

1961 PROGRAM

Sugar Technologists

CARIBE-HILTON

WEDNESDAY, DECEMBER 6

9:00 A.M. — REGISTRATION AND COFFEE SERVICE

9:30 A.M. — WELCOME ADDRESS
By Miguel A. Hernández Agosto

10:15 A.M. — CHEMICALS IN AGRICULTURE
By Dr. A. E. Carlson

10:45 A.M. — POSSIBILITIES OF A REFINERY IN THE NEWPORT AREA
By C. M. Nicholson and E. Holm

11:15 A.M. — POSSIBILITIES OF NUCLEAR ENERGY UTILIZATION IN THE SUGAR INDUSTRY
By Julio Hernández Fragoso

12:00 N. — COMMENTS AND FILM ON PERUVIAN SUGAR TECHNOLOGISTS MEETING
By Adalberto Roig

1:00 P.M. — COCKTAILS AND LUNCHEON

THURSDAY, DECEMBER 7

FIELD

9:00 A.M. — REGISTRATION AND COFFEE SERVICE

9:30 A.M. — DEVELOPMENTS IN THE FIELD AT CENTRAL AGUIRRE
By Aguirre Personel

10:30 A.M. — RECENT RESEARCH ON CHEMICAL CONTROL OF WEEDS IN TRINIDAD
By Dr. A. J. Vlitos and Ian Lawrie

11:15 A.M. — THE DEVELOPMENT OF THE NEW LANDS AT CAÑO TIBURONES
By Angel Iturbe

11:45 A.M. — EXPERIMENT STATION STAFF—DEVELOPMENTS IN 1961

12:15 P.M. — MOVIE—THE UNSEEN HARVESTERS

1:00 P.M. — COCKTAIL PARTY AND LUNCHEON

OF ANNUAL MEETING

Association of Puerto Rico

SAN JUAN **MILLS**

9:00 A.M. — REGISTRATION AND COFFEE SERVICE

9:30 A.M. — THE PERFORMANCE CHARACTERISTICS OF VARIOUS FILTER AIDS IN THE SUGAR INDUSTRY
By Dr. P. W. Leppla

10:15 A.M. — ROUND TABLE DISCUSSION ON BULK SUGAR HANDLING AND WAREHOUSING AS IT AFFECTS REFINING QUALITIES OF SUGAR

11:30 A.M. — THE HANDLING AND STORAGE OF REFINED SUGAR IN BULK AT THE PUERTO RICAN AMERICAN SUGAR REFINERY, MERCEDITA, P. R.
By J. E. Mayoral and Manuel Cruz Vargas

12:15 P.M. — OIL ANALYSIS AS AN AID TO MILL OPERATIONS
By Robert Kincaid

1:00 P.M. — COCKTAILS AND LUNCHEON

FRIDAY, DECEMBER 8

9:00 A.M. — COFFEE SERVICE

9:30 A.M. — RECENT DEVELOPMENT IN SUGAR LEGISLATION
By Dudley Smith

10:15 A.M. — PLAN FOR IMPROVING THE P. R. SUGAR INDUSTRY
By Arturo Riollano

10:45 A.M. — COMMITTEE REPORTS—
Frank Beale—Varieties
H. A. Willett—Sampling

11:30 A.M. — BUSINESS MEETING

1:00 P.M. — COCKTAIL PARTY AND BUFFET LUNCH FOR MEMBERS AND WIVES

SATURDAY, DECEMBER 9

VISITORS' DAY—Manuel Mejía Valentín

9:00 A.M. — TRIP TO GURABO EXPERIMENTAL STATION CONTINUING TO CENTRAL ROIG—YABUCOA

LUNCHEON—Las Chorras—Humacao, Puerto Rico

RETURN TO SAN JUAN

Average Yield In Puerto Rico

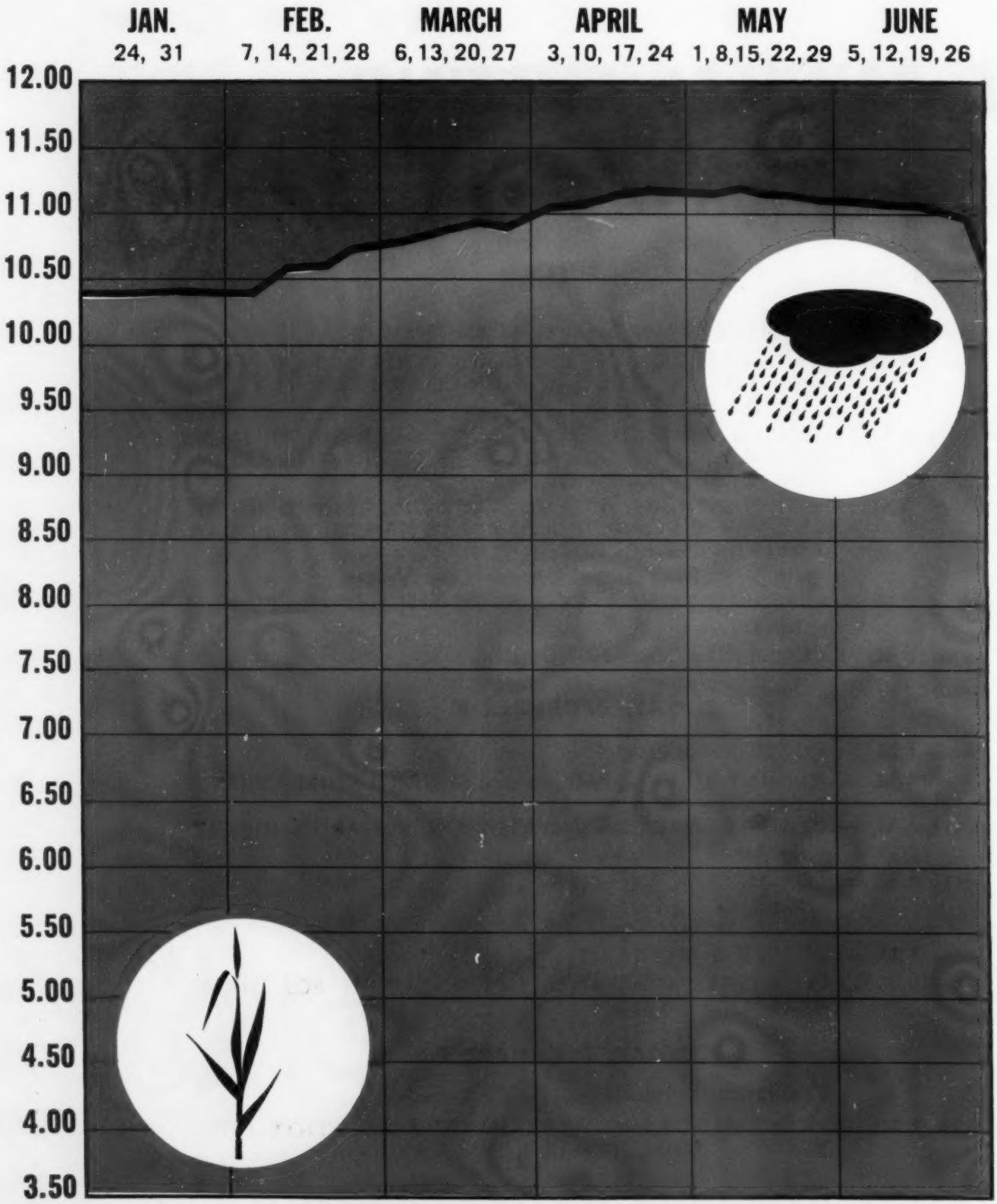


Chart shows weekly yield of 96° sugar percent cane based on a 10-year average for all Puerto Rican mills. The chart is derived from figures provided by the Association of Sugar Producers of Puerto Rico and shows the gradual increase in yield as the harvest progresses to an optimum point in the middle of the crop, followed, as might be expected by a gradual decline in yield.

A Plan For The Puerto Rican Industry

Centralized Services For Small Farm Groups

By Arturo Riollano*

THE critical situation affecting the Puerto Rican sugar industry in recent years, especially the agricultural sector is well known. The industrial phase has also been confronted with serious problems which have been solved with better success; but at the present time the industrial sector is faced with low yields and decreasing production.

To improve production methods it is essential to consider the following factors: size of farm, soil fertility, topography, climate, irrigation and drainage facilities, available capital or credit, and knowledge and ability of management. For any plan to improve production and reduce costs the size of the farm is one of the most important factors; perhaps decisive. Sugar cane cultivation is an extensive business requiring large land units in order to be successful. According to data furnished by the Service for Agricultural Stabilization, for the period of 1954 to 1960, 3,651 sugar cane plantations each smaller than five acres disappeared proving that small farms cannot survive. In the same period of time a total of 4,546 farms were eliminated from sugar cane cultivation; leaving a total of 14,973 active farms. This resulted in an approximate reduction of 40,000 acres in area devoted to cane cultivation. On the other hand, for the same period there was an increase of five farms with individual areas bigger than 500 acres. The tendency toward elimination of small farms and their consolidation into larger units in order to cultivate sugar cane more efficiently and economically is evident.

Also, based on information published by the Service for Agricultural Stabilization, the smallest farms appear to be the least efficient with lowest yields per unit of area. A persistent increase in tons of sugar per acre as the size of the farms increased is apparent. The explanation is that bigger units are in a better position for new plantings, improved cultivation practices and for taking advantage of technical methods and developments.

Valuable information has been obtained from research work done in Puerto Rico and foreign sugar cane areas, which may be very helpful if applied to the Puerto Rican cultivation system. Some of these technological advances have been used on the larger cane plantations.

In the face of this situation, any fundamental plan to improve the agricultural sector of the sugar industry should be based on an administrative method capable of grouping farms into bigger units, within proper geographical regions, for the purpose of furnishing sugar cane growers with essential services they are unable to obtain at the present time. The first step is to choose and fix geographical zones to group the small farms; and then to set up the proper organization to provide centralized services.

Something similar has been done successfully in handling sugar in bulk through the consolidation of land and sea transportation services. The sugar mills have been grouped into geographical zones to expedite sugar shipments through four main terminal ports: Aguirre, Guánica, San Juan and Aguadilla. Such centralized service for transportation and marketing has greatly reduced shipping and selling costs, for the benefit of sugar cane growers and sugar manufacturers, at a time when sea freight expenses have been heavily increased.

Sugar cane cultivation zones should be centered around the sugar mills to afford technical facilities and allow the organization of personnel required for efficient management, which is now only available to bigger units. The proposal involves an organization capable of providing consulting and administrative services as well as the required agricultural machinery and equipment to improve cultivation practices, regular sowing renewals, harvesting, etc. At the present time a great number of sugar cane planters are unable to buy badly needed agricultural equipment because of the low economic capacity of the small business units.

The proposed organization would also lend essential services for the development of other types of agricultural products suitable to every zone. It would make arrangements with neighboring experimental stations for cooperative research work on cane varieties, diseases, pests, irrigation and drainage, and some agricultural engineering problems. We would like to mention the following services: leveling and land preparation, proper use of herbicides and fertilizers, control of pests, mechanical harvesting and transportation, equipment maintenance, cane-seed distribution and propagation of improved varieties. If requested by the owners, the organization could assist in the management of the farms. The centralized service would help sugar cane growers to get proper financial assistance from banks or credit institutions, in accordance to the needs and capabilities of the individual agricultural enterprise.

Two areas can be used to start the plan, in order to check its possibilities. We refer to the southwest and northwest regions of Puerto Rico, in zones known as Valle de Lajas and Distrito de Riego de Isabela, including the municipalities of Aguadilla, Moca and Isabela. Efforts have been made by the Government and private enterprises to group agricultural units and to offer several services to growers in these zones.

In the future, if successful, the plan may be enlarged to include the sugar cane zones shipping sugar through the ports of Guanica and Aquadilla. The goal should be to extend the services, including transportation and marketing.

In summary, we suggest a careful study of the possibilities of consolidating small farms in order to create sugar cane producing zones and to establish regional organizations capable of providing sugar cane growers with those services which are essential for the sound improvement of sugar cane cultivation, transforming small farms into reasonably profitable businesses.

***Based on a paper delivered by the author at the Annual Meeting of the Puerto Rican Sugar Technologists Association, San Juan, December 6-9, 1961.**

Sugar Drying in Venezuela

After supplying a Turbo Tray Dryer/Cooler to the Sugar Factory Central el Palmar S.A., San Mateo, Venezuela, we recently received the following letter:

„In the previous three campaigns during which our factory has been in operation, this Dryer has performed to our fullest satisfaction. We have at all times been able to obtain the stated capacity of 400 tons in 24 hours. The sugar fed to the Dryer has an initial moisture content of approximately 1% and is dried to an average final moisture of 0.029%. As the drying temperatures are relatively low the crystals are well preserved during the drying process. The sugar has a shining and appealing appearance."

Buttner Turbo Tray Dryer/Coolers are operating with the same dependability all over the world. Our specialized Engineers are always ready to advise you on all questions about economical and careful drying of sugar.

Subsidiary:

in **USA and Canada:** Buttner Works Inc., 66-68 Main Street, P.O. Box 57, Madison N.J.

Representatives:

Puerto Rico: Badrena & Perez Inc., P.O. Box 596, Hato Rey

Mexico: Proveedora Azucarera S.A., Balderas 36-902, Mexico I D.F.

Venezuela: GUINAND S.A.V.E.R. Apartado 668, Caracas

Agencies in all Central and South American countries, India, Japan etc.

BUTTNER WORKS INC.
66-68 MAIN STREET
MADISON N.J.

ABSTRACTS OF PAPERS

Delivered at 1961 Annual Meeting of Puerto Rican Sugar Technologists

Emission Spectrographic Analysis—A New Technique for the Sugar Industry

ROBERT L. KINCAID, *Analysts of Puerto Rico, Inc., San Juan, Puerto Rico, P.R. Sugar Tech. Association, Dec. 1961*

The double-edged knife of ever-increasing costs versus pegged sugar prices has cut deeply into the profit potential of the sugar industry. Consequently, new techniques for higher yields and greater efficiency of operation have been dictated by ever more urgent economic demand of the industry. Increased mechanization of both mill and field operations has been a natural outgrowth of this demand. A vital new technique in augmenting efficient mechanization is emission spectrographic analysis of used lubricants for the prevention of destructive mechanical failures.

When a sample of material is properly excited by an electrical spark or arc, each element comprising the sample emits certain specific predictable wavelengths of light. Emission spectrochemical instruments detect these wavelengths of light for the elements of interest and by measurement of the intensity determine the percent concentration of the elements in the sample.

The lubricating oil in engines, transmissions, final drives, mill reducers, compressors, turbines, etc., is not changed until it becomes contaminated as indicated by physical tests in the laboratory. The lubricant circulates throughout these assemblies to all moving components. As the parts of the assembly or unit wear, trace elements of wear are carried away and retained by the oil. The concentration of these elements, as determined by spectrographic analysis, reveals the condition of wear of that unit.

A sample of lubricant is taken from the unit periodically on a time or mileage basis. A portion of this sample is excited in an emission spectrochemical instrument to measure the amount of trace elements present. These trace elements give a positive means of identification to the critical parts that are wearing in that unit. The balance of the sample is then analyzed for viscosity, flash point, precipitation, acid content, and other physical properties. By maintaining a log of a specific unit, a history of trace elements is recorded. An abnormal increase in one or more of the elements indicates an abnormal condition in the unit and provides a means of predicting actual maintenance schedules; e.g., in an engine, a marked increase in silicon indicates air filter malfunction, an increase in lead and copper indicates bearing wear, an increase in aluminum and chromium indicates ring and cylinder wall wear, etc. The data obtained from these analyses are evaluated by maintaining a continuing plot of the concentration of each of the elements versus operation hours for the individual units. Generally speaking, it is not a technique which can be applied effectively to only a few units of a large group in anticipation that the general course of events for all units can be predicted on the basis of the analyses of samples taken from the few, selected assemblies. It should also be noted that the emission spectrochemical analysis of used lubricants is not a panacea for the detection of all of the operating problems. As an example, this technique is of little value in detecting impending fatigue failures since it reveals abnormal wear or corrosion conditions which may not be directly associated with fatigue failures.

The intrinsic value of this type of used-lubricant analysis lies in the fact that the occurrence of abnormal events in such units are indicated soon after distress or malfunctioning is first encountered, thus indicating the need for corrective action at a time usually far in advance of probable component or assembly failure.

The obvious advantages to such a technique are increased efficiency and economy of mechanical operations; better scheduling of needed maintenance; greater availability of equipment during critical periods such as the harvest; more efficient utilization of maintenance supervision; and savings derived in correcting relative minor malfunctons before they lead to destructive failures.

■

Plan for Improving the Puerto Rican Sugar Industry

ARTURO RIOLLANO, *P.R. Sug. Tech. Assoc., Dec. 1961*

Data is preesnted to show that the small farm units for sugar cane production in Puerto Rico are very inefficient as agricultural enterprises because of low yield per unit area. The general trend is the elimination of the small farm units and the formation of larger units for more efficient operation. A proposal is presented for grouping a large number of farms into geographic regions for the purpose of establishing service organizations to help the sugar cane growers. These organizations should be able to supply the adequate agricultural equipment and farm machinery on rental basis for carrying out mechanized agricultural operations in the designated regions. This should include centralized services for the application of fertilizers, herbicides and pesticides as well as for harvesting and transporting the sugar cane crop to the mill. The organization should be in a position to offer administrative and consultation services to the cane growers. It should help in the renovation of the sugar cane plantings by supplying seed from the improved sugar cane varieties.

■

Performance Characteristics of Diatomite and Perlite Filteraids in the Cane Sugar Industry

G. G. HALVORSEN, M. B. HARRIS, D. MENDOZA, *P.R. Sug. Tech. Assoc., Dec. 1961*

Filteraid technology has made many advances over the years in the processing of diatomite or diatomaceous earth developing many types and grades to fit best the flow and clarity requirements for industrial filtration. Diatomite filteraids have been standardized and used in the sugar industry for many years and the general performance of the various types and grades are understood in the industry.

The development of filteraids from perlite rock by the Dicalite Department, Great Lakes Carbon Corporation, has created a range of perlite filteraids similar to the permeability range of diatomite filteraids but showing different performance characteristics on sugar liquors.

Laboratory filtration studies at several Puerto Rico refineries during the last grinding season indicate that the proper selection of a perlite filteraid will effect filtration economy by affording more flow rate per pound of filteraids at equivalent liquor clarity to the commonly used diatomite filteraid.

Some Aspects of Research at Central Aguirre

ROGER C. BILLMAN, *Luce & Company, S. en C., P.R. Sugar Tech. Assoc., Dec. 1961*

The history of the Research Department at Aguirre goes back to the early 1950's at which time it was so designated. In 1952 our present two story laboratory was constructed, affording facilities for projects that would eventually help the company.

Presently, the department is made up of two sections. The Industrial Section is headed by a chief chemist and one assistant chemist, being augmented by the Machete mill chemist during the idle season.

The Agricultural Section is staffed by four trained agronomists, and sometimes during the summer by an advanced student from the university at Mayagüez. In addition, there are about twenty persons involved as lab. technicians, field assistants, sampling foremen, and laborers.

As the research department is involved in conducting projects not only on an investigative level, but also on a quality control level, the overall program can be stated as follows:

A. The efforts of the agricutural staff are directed toward varietal testing and improvement; fertilization and irrigation, both on a research and control basis; the evaluation of chemicals and their best method of use; and other projects as may be designated.

B. The efforts of the industrial staff are directed toward pilot plant studies on ion exchange, its development and implementation in the sugar industry. In addition to the pilot plant work, the laboratory staff carries out the routine analytical work which includes the cane tissue, soil, sugar, juice, and molasses samples which are brought into the laboratory.

It is the purpose of the Research Department of the company to do research and to maintain the "tools" used in quality control. The majority of the work will be with sugarcane but under certain circumstances may be channeled into other feed and food crops. Both the culture and processing of sugarcane will be incorporated into our planned program.

■

Variety Program of the Experiment Station of Luce & Co., S. en C., Central Aguirre

PEDRO CINTRON ZAYAS, *P.R. Sugar Tech. Assoc., Dec. 1961*

For years the Experiment Station of Luce & Co. has kept, in cooperation with the Agricultural Experiment Station of Rio Piedras, a continuous variety program to help in the improvement of this important phase of our sugar industry.

Comparative variety experiments as well as propagation plots are established in different areas of Luce & Co. land.

In order to prove that a sugar cane variety is superior to the one cultivated in our region numerous comparative variety experiments have been established in different areas and in different soil conditions.

The new varieties are tested for total production of sugar per acre, yield, resistence to diseases and other agronomic characteristics such as type of growth. Being emphasized now are the erect type of growth and other characteristics which reduce production costs especially during the harvesting. This is being done during the selection of new varieties. Experimental procedures are explained and results of 12 varieties are tabulated.

■

Chemical Ripening of Sugar Cane

RAMÓN ORTÍZ NOGUERAS, *P. R. Sugar Tech. Assoc., Dec. 1961*

Yields of sugar per acre are influenced by such important factors as climate, soil, variety, age and nutrition (fertilizer, irrigation, drainage.) In addition to the influence of cultural practices, the climatic conditions during the growing season and especially during the harvest season can affect yields. The most climatic influence during the harvesting is rainfall.

During the 1958 Crop the first trial was established using phosphoric acid fertilizer grade, 75% phosphoric acid or 45% P_2O_5 at the rate of one gallon of the acid per acre with five gallons of water. This solution gave a pH of .8 which is very acid. Burning of the cuticle was observed. This application gave about 4.4 pounds of P_2O_5 per acre.

The experimental area and check area were sampled two days before the application, for determinations of Nitrogen, Phosphorous, Potassium and Moisture, and each week thereafter samples were taken until harvest.

The results from burned cane samples taken during grinding of the plots at the mill were as follows:

Table I

Average Samples of 4 Cars Each

	% Sucrose	*Purity*	*96° Yield*
Treat.	14.22	82.96	9.53
Check	12.81	80.20	8.42

The results were considered inconclusive and the trials were continued in 1959 changing from the acid form to the salt form, using the following materials:

1. Monoammonium phosphate: Applied at the rate of 15 lbs./acre or 9 lbs. P_2O_5 per acre.
2. Monopotassium phosphate: Applied at the rate of 12 lbs./acre or 6.2 lbs. of P_2O_5 per acre.

These two materials were used in 6 gallons of water per acre and sprayed by airplane. Fields were harvested at intervals of one to three weeks from the date of spraying.

During the first series of experiments an increase in 96° yield was observed, varying it from .19 to 1.8 when compared to the check plot. A second series of experiments was established, but the data were inconclusive.

Our department is planning more work on this line of investigation and for the next crop new areas will be established. With previous years' experience we expected to obtain more definite results.

■

Evaluation of Chemical in Weeds and Insect Control

RAFAEL A. BERRIÓS, *P.R. Sugar Tech. Assoc., Dec. 1961*

There exists in the market a diversity of herbicides, some being highly recommended for sugarcane; others are still to be tested since their mode of action is still doubtful. In recent years we have been attempting to evaluate different herbicides for the purpose of finding out if the herbicide will cause any damage to the sugarcane plant. If the herbicide does not cause any damage, then we study its lasting effect. If the field is kept clean of grasses, and if it closes-in without using any other post-emergence herbicide, we consider this chemical excellent.

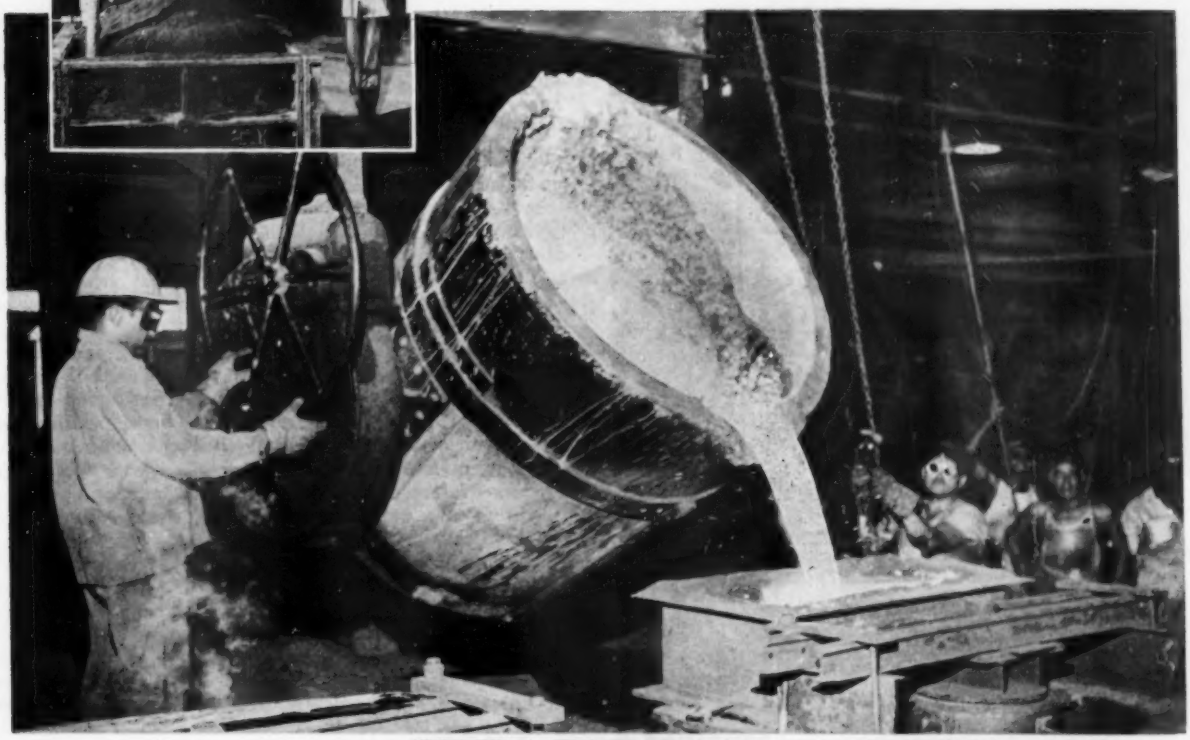
A third phase of the evaluation concerns the amounts to be used.

Some herbicides are effective on certain species of grasses only. We have made an effort to find out which grasses are controlled by which herbicide.

In 1960, a series of tests were made to determine the effectiveness of three well known pre-emergence herbicides—Simazin, Diuron and Monuron. After a series of tests we decided to use Simazin and Diuron, still experimentally.

It was found that four pounds of either chemical was optimum. Diuron worked better in rainy areas while Simazin did a better job in drier areas.

ALWAYS IN THE LEAD!



For more than 40 years Porto Rico Iron Works has had a single formula for success: Creative ability, service and a sense of responsibility to the growing needs of Puerto Rican industry.

Porto Rico Iron Works maintains a department specializing in Industrial Design to study and solve any modern technical problem.

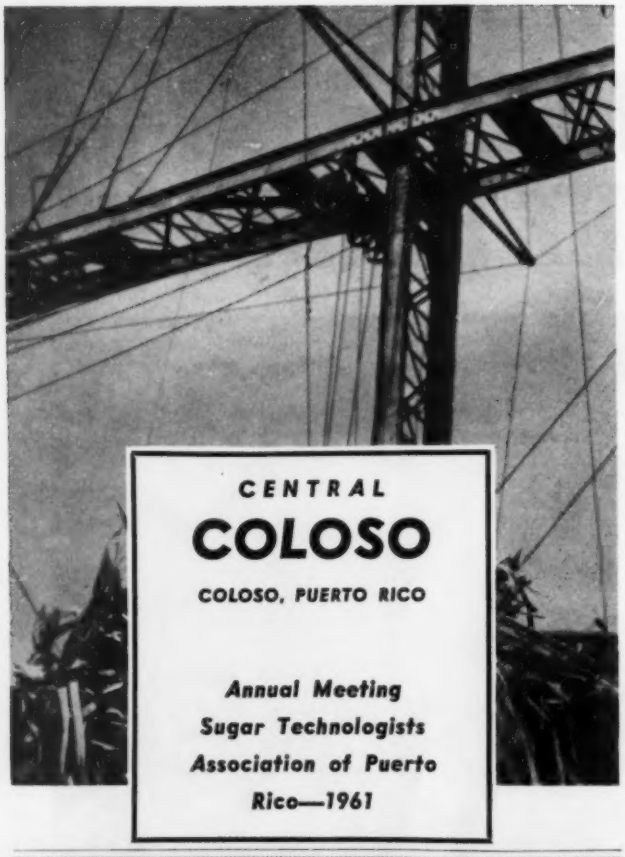
We rely on the most modern machinery and equipment, knowing that our constant ability to serve industry is our client's finest guarantee of security.

That's why we are always in the lead.

PORTO RICO IRON WORKS, Inc.

PONCE – SAN JUAN

A NATIVE ENTERPRISE DEVOTED TO CREATE A BETTER PUERTO RICO



Central
Igualdad
Inc.

Sugar
Producers

Mayaguez
Puerto
Rico

In 1961 several new herbicides were introduced. Kuron, a new liquid herbicide, was highly recommended as a pre-emergence herbicide as well as a weed-killer having more or less the same action as 2,4-D. As a post-emergence spray, it gave very good results since a wide variety of broad-leaves were controlled by it besides keeping the field clean for about six weeks. Later on, it was tried as a pre-emergence and results were very promising.

A combination of 2½ pounds of T.C.A. and 2½ Doupon applied two times gave us a control of over 80 days. Also, we obtained good results with the T.C.A.-Diuron combination. In all of the above cases, 2,4-D was used depending on the presence or absence of broadleaves.

In the field of insecticides, *Diatraea saccaralis* commonly known as the borer, accounts for a considerable loss of sugar every year in Puerto Rico. Another type of borer, *Elasmopalpus lignosellus*, also causes substantial losses.

Many insecticides have been used, i.e., Endrin, Diazinon, BHC and others. Endrin, either in granular form or in liquid form has given good results, which up to now have been promising although more research has to be done before reaching any definite conclusions.

The yellow aphid has been partially controlled by applications of Endrin, BHC, or Diazinon.

Positive control of the white-grub was accomplished by applying Aldrin at the rate of one-half gallon per acre at the time of plowing.

Different nematocides such as Nemagon, Fumazone and D.D. have been tested. The concentrations used of each varied from one gallon up to 1½ gallons. The methods of application were two: First, by using a metering device which regulated the flow of the nematocide into the irrigation water and, secondly by using a fertilizer attachment on the tractor when applying Nemagon granules at a rate of 100 lbs./acre.

Up to now we do not have conclusive results since these experiments were made a few months ago, but we hope to have more information in the near future.

■

Field Tests With Chemical Desiccants

RAMÓN ORTÍZ NOGUERAS, *P.R. Sugar Tech. Assoc., Dec. 1961*

Due to the use of mechanical harvesting and our practice of burning trash residue left in the field after harvest, experiments were conducted in the field to check the results of different chemical desiccants. Best results were obtained with 7.25% PCP applied three days before burning the cane for harvest. "Reglone," a herbicide desiccant, was also used. Pronounced desiccation was apparent after 72 hours. Percent trash delivered to the mill was normal. There was one point less in the Brix and sucrose readings while trash that remained unburned in the field was 50% less in the treated plot than in the check plot. So far no adverse effects on subsequent ratoons have been observed. Further experiments on chemical desiccation are required.

■

The Luce and Company Crop Log Program, Sampling Techniques, Interpretation and Use of Analytical Data

BRUCE REMICK, *P.R. Sugar Tech. Assoc., Dec. 1961*

Foliar diagnosis is now used in many sugarcane producing areas of the world to determine the fertilizer and moisture needs of the crop, and has proven to be an asset wherever employed. The Luce Land Company is now using a Crop Log system.

(*Continued on page* 56)

Fundamentals Of Operation

The High Speed Vacuum Pan

By Alfred L. Webre, M.E.*

Continuing the series of articles started in *Sugar y Azucar*, August 1961, Mr. Webre records his experience in the design of a truly efficient high speed vacuum pan. The pan floor is the heart of the process and over the years the author has initiated a number of modifications, each carefully tested and proved in operation, each contributing materially to improved performance. The series will continue in subsequent issues and on completion, will comprise a practical working treatise on heat transfer apparatus for the sugar industry. —Editor.

LAZY vacuum pans are enemies of good fabrication. They are difficult to operate, lose time, destroy valuable products and produce sugar of poor quality. There are many in use, some of very recent manufacture.

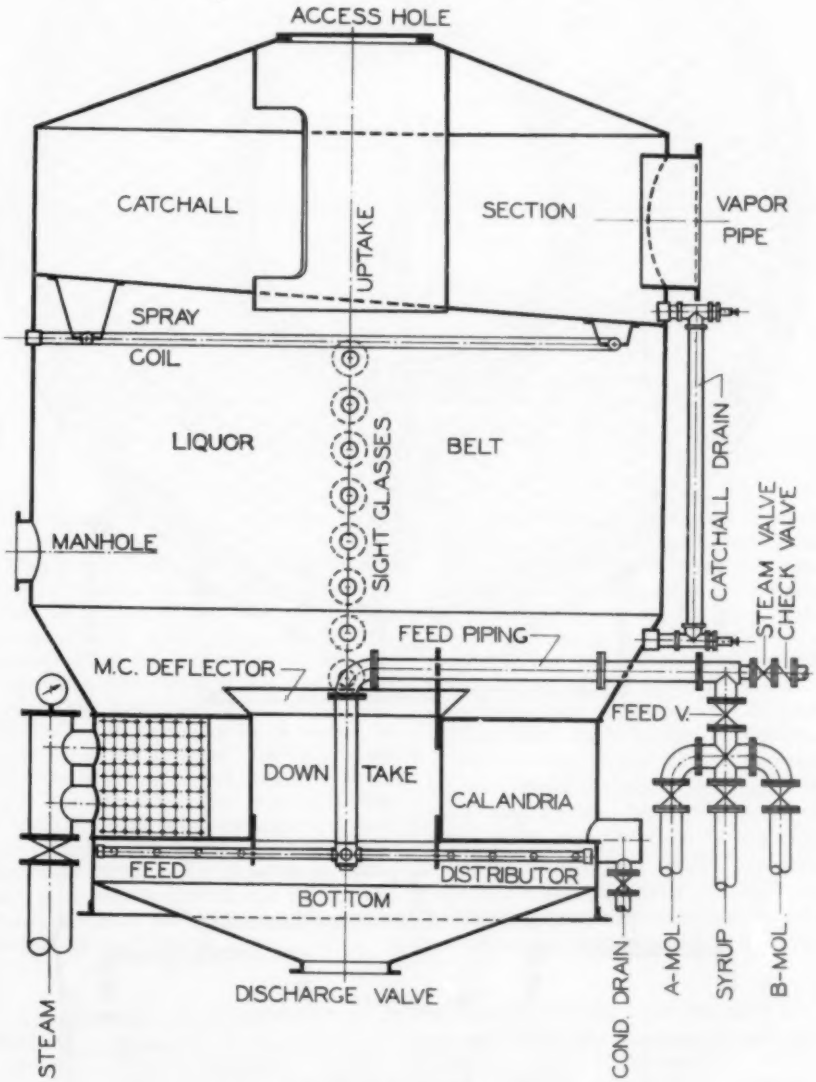
After years of experience and research, the defective features have been identified, and this has led to the design of an outstanding apparatus, which has been named the High Speed Vacuum Pan, presented in this discussion. It has been well tested in the field, and has given excellent performances. It is easy to control, fast in operation, destroys nothing, and the sugar is of very good quality.

In the High Speed Vacuum Pan the supporting lugs or brackets have been eliminated. In any event, the weight of the pan must be supported on its shell, and this has been done directly by providing a downwards extension of the cylindrical part of the bottom, reinforced by a heavy angle iron welded on for bearing purposes. With this arrangement, the position of the pan on its supporting beams can be adjusted to suit convenience, instead of having to locate the brackets in their exact place. This has the additional advantage of clearing the passageway of all obstructions.

Based on the requirements of satisfactory operation, the contents of the bottom have been held to a minimum to restrict the size of the footing and avoid stagnation. In this we have not gone too far, leaving sufficient clearance to expand tubes, and no constriction of the path of the massecuite, which might impair free movement, particularly if the pan is equipped with mechanical circulation.

The shape is conical, with an angle of 20° with the horizontal. At the outer edge there is a cylindrical ring, 8 inches to 10 inches high, connecting the calandria to the bottom. The discharge valve at the center of the bottom is large enough to drop a complete strike in not more than five minutes, with the valve wide open, and no impediments.

The heart of the vacuum pan is its calandria, and it must therefore be planned with meticulous care, because its performance involves difficult heat transmission.



CROSS SECTION
OF
HIGH SPEED VACUUM PAN

*The Jackson Industries of Birmingham, Alabama, who retain Mr. Webre as consultant, are manufacturers of this Sugar Mill Apparatus.

• The conditions on the steam side of the tubes are very similar to those in an evaporator, and the design is treated in the same way. The first consideration is to avoid unequal flow of steam through the heating surface. If this is not done, pockets or zones of non-condensable gases will form, obstructing the transmission of heat, and resulting in a lazy unsatisfactory operation, to which reference was made at the beginning of this discussion.

Many years ago Professor E. W. Kerr, who had charge of the Engineering Department of Louisiana State University, made some very interesting observations by installing a considerable number of calibrated thermometers at various points in the shell of an operating calandria. With these he determined the temperature, and he himself told me that no two gave identical readings, variations ranging up to 10° F. Following this, he made a number of tests to show the influence of small proportions of gases on heat transmission. The results were reported by him in his now mostly forgotten "Louisiana Bulletins," and should have been an invaluable revelation. Most of us, with the unconcern of youth, thought his conclusions to be exaggerated, and did not give them the consideration they deserved.

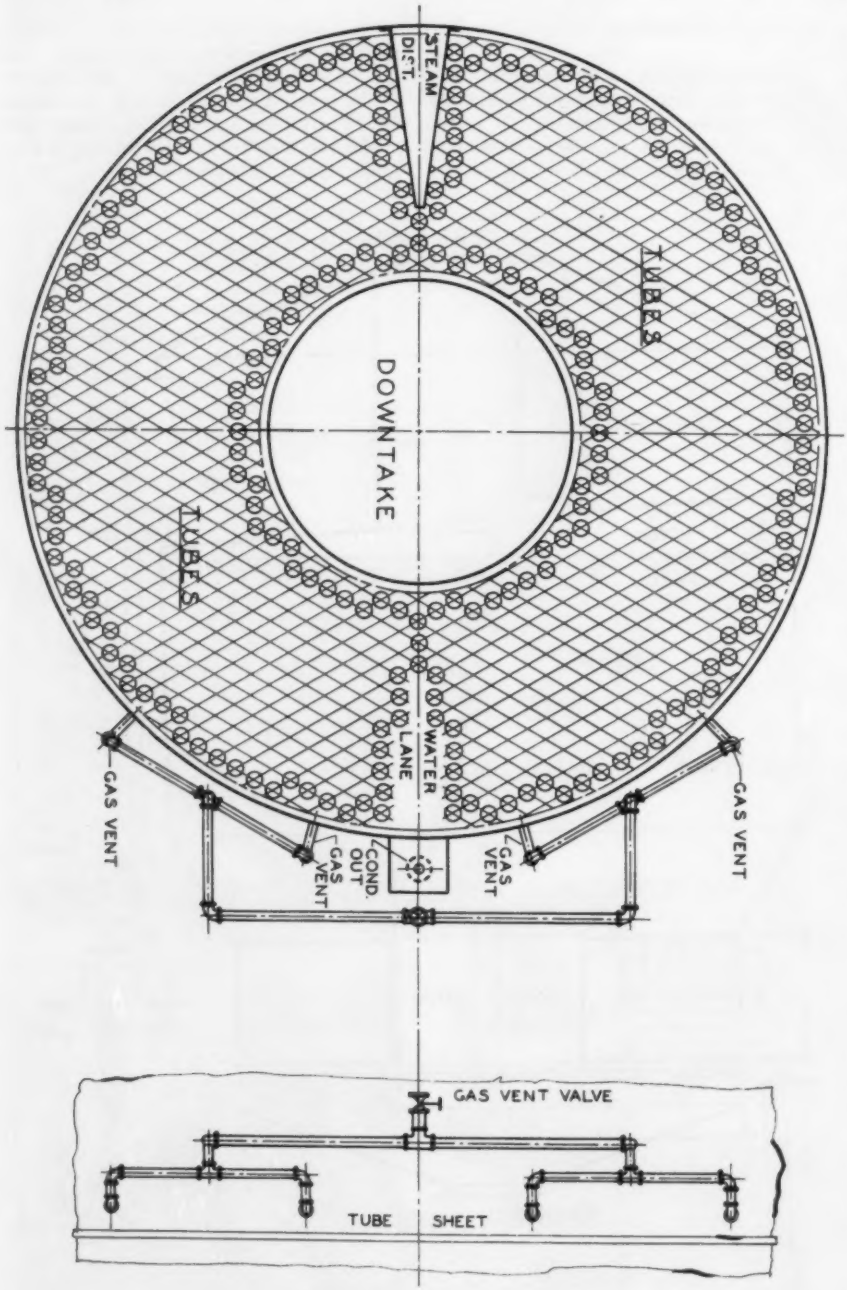
Now, however, the facts prove that this information was well founded, and that much can be gained by taking the matter very seriously. So, the first part of our plan is to feed steam into the calandria at one point only. Inside, at this entrance, is a wedge-shaped distributor, receiving the steam, extending from the upper to the lower tube sheets, and protruding inside almost to the downtake. The small end of the wedge is blanked off. Steam enters the heating surface through a large number of relatively small holes in the enclosing sides of the wedge, with the location of the holes graduated to provide more heat near the shell than at the downtake. This gives a very good start by admitting heat in proportion to the surface through which it has to pass.

• Mindful of the ever present residual gases, which concentrate as condensation takes place, the next problem is to remove them thoroughly, so that practically none is left at any point to prevent good heat transmission. With proper initial distribution of steam, the gases are pushed forward by the large volume, and the accumulation should be at a point furthest from the steam inlet, which is on the opposite side of the calandria. It seems most improbable, however, that these gases will be found all accumulated at this one point. Tests have been made which have established this fact beyond a doubt.

The solution to the problem has been found in the use of not one, but four gas outlets in the shell of the calandria, about four inches above the lower tube sheet, equally spaced to occupy an arc of not less than 90° overlapping a point diametrically opposite the steam inlet. Then, the two connections on the left are yoked together, with an equal arrangement on the right. Connections at the center of these two yokes are again yoked to one central outlet, with control valve. With this system, which is perfectly symmetrical, when the valve is throttled, equal amounts of gas are removed from each of the four initial outlets in the calandria. This is all clearly shown in the sketch accompanying.

• The current system of having one, two, three or four separate connections extending from the lower tube sheet, through the bottom for condensate removal is difficult to maintain in practice, and any leak in these pipes will dilute the massecuite while the pan is running, and admit sucrose into the condensate while the pan is being discharged, so we have sought a simpler and loss objectionable way.

The method finally adopted is not to have



TUBE SHEETS WITH
STEAM DISTRIBUTION, VENTS & DRAINS
FOR HIGH SPEED VACUUM PAN

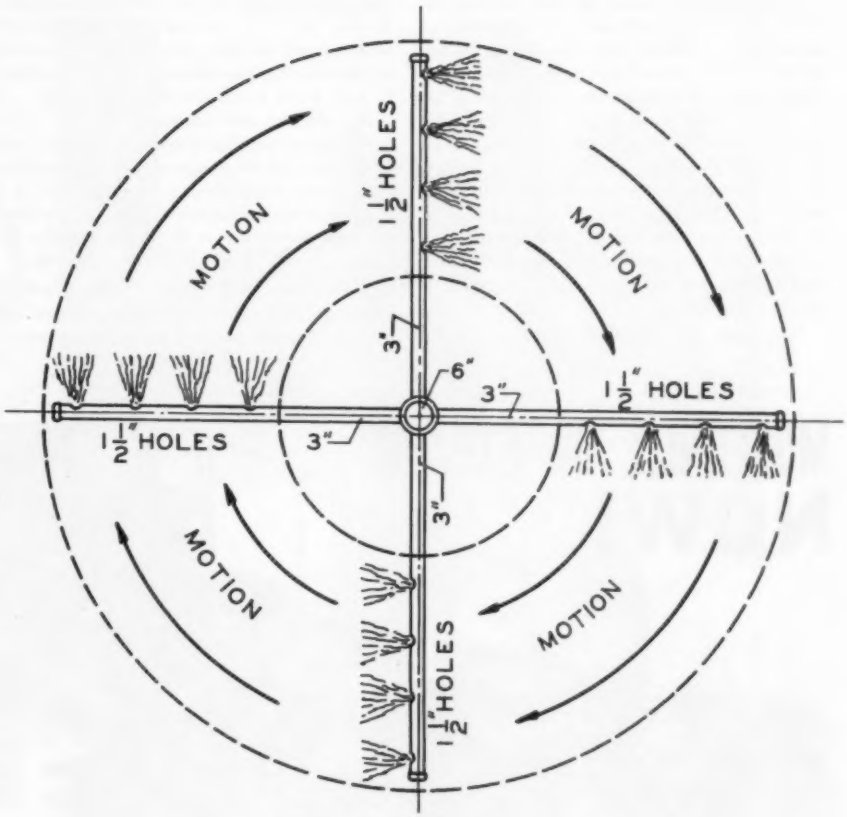
the drain pipes through the bottom at all, and to remove the condensate directly. This has been achieved simply by welding to the side of the calandria at a point exactly opposite the steam inlet, a stubby piece of 12 inch or 14 inch pipe, with the center line of this pipe flush with the upper surface of the lower tube sheet. Then, a semi-circular piece is cut out of the shell at this point, permitting the condensed water to fall freely into this 14 inch pipe, from whose bottom it can be drained very easily.

It is necessary to design the arrangement of tubes to provide a water lane for the easy approach to the outlet, and this also is shown in the sketch to which reference was made above. The water enters this lane from the space between the individual tubes at many points, and flows easily to the outlet, without backing up in the calandria and blanking part of the heating surface. Observations of the levels of the condensate have shown that the objective of this design has been well attained.

• As regards the matter of the downtake, our standard is to make its diameter 40% of that of the pan, which serves very well, and it is doubtful if anything is gained by making it larger. At the upper end is attached a removable deflector at an angle of 45° and a height of around eight inches. This throws the boiling massecuite rising from the tubes towards the shell, and thus avoids its mixing with the cooled material coming down from above for another pass through the heating surface, thus improving the circulation. As another advantage, this has the same effect as increasing the diameter of the downtake, without losing heating surface.

• A considerable gain has resulted from the use of tubes three inches in diameter and 36 inches long, instead of four inches in diameter and 48 inches long, which is more or less standard. By this change, there is as much heating surface as with four inch by 48 inch tubes, and more favorable proportions, because this materially reduces the volume of the footing, and gives better heat transmission as well. Gillette, the Technical Director of the Crockett Refinery in California, is of the firm conviction that after the length of the tubes in calandrias reaches three feet, they might as well stop there because any increase beyond this length does not yield appreciable results. Our experience has confirmed his judgment. We have obtained best performances in refinery work with four inch tubes only 30 inches long.

For normal raw sugar work, three inch tubes give excellent results. If the viscosity of the massecuite is abnormally high, four inch tubes are recommended. For ordinary refinery work, this applies also, because to obtain high yields the strikes must be discharged very tight. The same is true of low raw pans in beet sugar factories for the same reason, particularly if the beets have been frozen, in which case the presence of excessive amounts of raffinose increases the viscosity beyond reason.



PLAN VIEW OF FEED DISTRIBUTOR IN BOTTOM OF HIGH SPEED VACUUM PAN

The diameter of the liquor belt attached to the calandria is immediately increased by 25% by means of an inverted frustum, whose sides are at an angle of 30° with the vertical. From the frustum up, the shape is cylindrical. The object of this design is to reduce the hydrostatic head of the massecuite of a given volume by increasing the diameter of the pan, and this reduces the duration of the strike and improves circulation. The normal height of massecuite when a strike is completed is about six feet above the calandria with natural circulation. This increased diameter of pans above the calandria is an old idea, which has been rejuvenated. It always had merit, but this was not recognized until lately.

With the High Speed Vacuum Pan, the upper part of the liquor belt constitutes the catchall, which is of very simple and effective design, easily accessible for cleaning, and of ample proportions. The vapor outlet, instead of being at the top of the pan, is at the side, close to the dome; and the additional height of the catchall section is enough more than the diameter of the vapor pipe to allow ample margin of clearance. There is a flat circular division, properly braced, between the catchall section and the massecuite section, inclined towards the vapor outlet, and the drain is just below it, connected to a pipe outside, proceeding downwards and reentering the shell just above the tube sheet. Crosses with steaming out connections are provided at each turn.

TABLE 1

Type of Strike	Steam Pres.	Vacuum	Purity	Brix of Feed	Brix of M.C.	Duration, Hours	Average "U"
"A"	6.5	25.0"	84.0	67.2	92.4	1:13	121.0
"B"	4.6	26.5	73.2	69.2	94.6	1:50	85.0
"C"	4.3	26.5	58.5	67.0	95.6	2:35	50.1

Note: The volume of the strikes was about 1350 cu. ft. on a 12'0" x 14'0" pan.

Exactly in the center of the division between the liquor belt and catchall sections is welded a vertical pipe extending to the dome. On the side of this pipe, opposite the vapor outlet, is a large rectangular port for the unimpaired passage of vapors from the liquor belt. The pipe is of the same diameter as the downtake in the calandria, which is considerably larger than the vapor outlet, so that the velocities are much reduced. As the vapors turn and proceed towards the vapor outlet, the speed decreases still more, and no entrainment is possible, nor are there any friction losses.

The dome is conical in shape, with its sides at an angle of 20° with the horizontal. In the center is provided an opening with bolted cover for the introduction or removal of the mechanical circulator and its parts, if and when a circulator is installed.

An efficient and adequate feeding system is the most important accessory to any vacuum pan, and its design demands consideration of the fundamentals of operation. It is a grave error to assume that by simply feeding into the center of the downtake, the distribution will be all that can be desired.

Satisfactory dispersion of the incoming syrup or molasses is very difficult, and this is the principal cause of faulty performance, particularly with low grade viscous material. In our design, feed enters the shell of the pan just above the calandria, and proceeds horizontally to the center of the downtake, on the side of which it is supported. The pipe now turns with an elbow, and proceeds down to a point just below the calandria, where a cross is attached, having four horizontal branches, each one-half the diameter of the pipe, and equally spaced, supported by individual brackets welded to the bottom of the downtake.

The free ends of the branches are blanked off, and each has four feed holes, one-half the branch diameter, located on the clockwise side, horizontally under the tubes. Thus, the entering feed is all below the calandria, and imparts a clockwise whirling motion to the massecuite in the bottom of the pan, with excellent distribution. This agitation is further emphasized by admitting a certain amount of exhaust steam into the feed pipe outside the pan, between it and the controlling feed valve, all of which is a modification of the Claassen idea. Exhaust steam is left on after feed is shut off, as this provides better circulation during the final period of most difficult concentration. The method has resulted in a major improvement wherever it has been used, and does not involve delicate adjustments.

If the pan is equipped with mechanical circulation, it is at once apparent that this new method of feeding cannot be used. The meladura or molasses must enter either the bottom, near the discharge valve, or in the valve itself, if it is provided with an inlet opening.

Other Equipment:

In order to provide proper control for vacuum pans, the following equipment is recommended:

1) First, there should be a satisfactory regulator, capable of holding the vacuum within one-tenth of an inch of mercury of the desired point.

2) An accurate apparatus to indicate or record supersaturation through a range of from 1.00 to 1.75, for purities from 50 to 100.

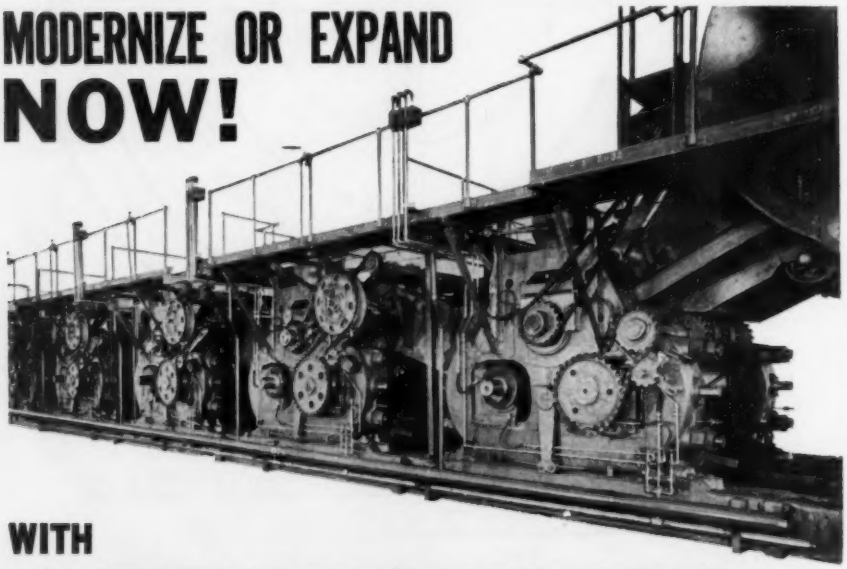
3) A seeding funnel for introducing powdered sugar into the pan at the proper time, connected to the shell just above the calandria.

4) Mechanical Circulation, which will be discussed in the next article of this series.

All the usual fittings are provided, such as: Sight Glasses, Proof Stick with wash basin, Pressure and Vacuum Gauges, Water Gauge Glass in the calandria, Manholes, etc.

The performances depend upon the conditions of operation, which are variable. To give an idea of what can be done with High Speed Vacuum Pans, the accompanying readings, shown in Table 1, were taken at a well operated Central in Puerto Rico, just as the pan works in their routine of daily runs.

MODERNIZE OR EXPAND NOW!



WITH

TOP QUALITY VULCAN SUGAR MILL EQUIPMENT . . .

GRIND UP TO 8000 TONS OF CANE EVERY 24 HOURS

Reports from the field on Vulcan performance continually re-affirm the ruggedness and productivity of Vulcan sugar mill machinery and equipment . . . Ruggedness in that Vulcan mill owners are not afraid to operate at high speeds; and in Productivity to grind from 7000 to 8000 tons of cane in a twenty four hour period. This spectacular performance together with sucrose extraction up to 96.49 and average sucrose in bagasse 1.64 means that mills using Vulcan equipment are running faster . . . producing more . . . making a higher margin of profit.

If you are going to modernize, Write to Vulcan now. Our Engineers will gladly assist you in upgrading your present equipment. If you are going to expand, Write to Vulcan now . . . Vulcan Heavy Duty Sugar Mills are Rugged . . . Productive . . . Giving you long and efficient service, with a minimum of maintenance.

For information on any of the following . . . Write to Vulcan today . . .

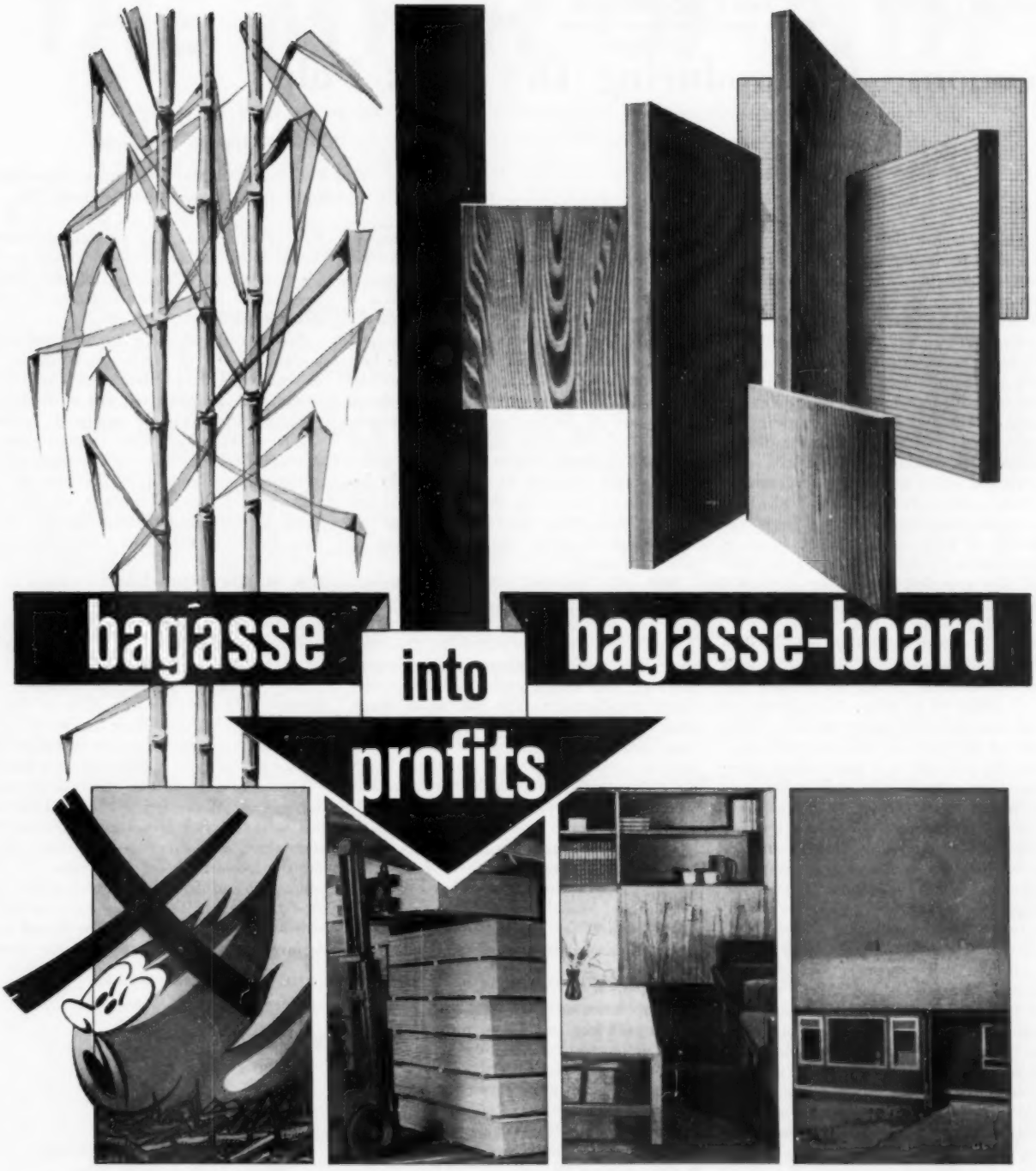
- Cane Mills and Crushers with all Auxiliaries
- Reshells and Mill Replacement Parts
- Evaporators, Pans, Condensers, Juice Heaters, Etc.,
- Steam Turbine Drive Units, Gearing and other Drive Equipment

Preliminary designs and proposals submitted promptly on request.

VULCAN IRON WORKS, INC.

WILKES BARRE, PA., U. S. A., CABLE ADDRESS: "VULWORKS"

SUGAR MILLS, ROTARY KILNS, COOLERS, DRYERS, RETORTS, CALCINERS, VERTICAL LIME KILNS, BRIQUETTING PRESSES, ELECTRIC HOISTS, SHEAVES



Stop burning your bagasse

Why waste money? Bagasse is an excellent raw material for the production of high quality multi-purpose boards in a wide range of densities, thicknesses and finishes.
Ask for full details. To-day!

interbagasse

BASEL - SWITZERLAND - P.O. BOX 237 - PHONE 247800

Dehydration By Press & Dryer

Economy In Producing Dry Beet Pulp

By C. Eliason

Vice President and Manager, Sugar Department
The Stearns-Roger Manufacturing Co.

With the increasing demand for stock and poultry feeds and the high cost of transportation, particularly in the case of bulky shipments, concentrated stock feeds of known food values are becoming a more and more desirable form of feed. We usually think of stock feeds as being corn, oats, barley, rye, wheat, and by-products of these grains supplemented with forage crops such as clover, timothy, alfalfa and grasses. The grain class of stock feeds may be fed in natural state although oats, barley, rye, etc. are often steamed and rolled and corn is dry crushed. For many years cotton seed meal was used as a supplement to corn for finishing off the fattening of beef cattle. Today, however, dehydrated beet pulp and forage crops have practically crowded out cotton seed as a supplemental ration west of the Mississippi and reaching to the Pacific.

Beet pulp was recognized at an early date as a valuable stock feed. Beet pulp as it leaves the diffusion process has a water content of about 94 to 95%. The percent of dry substances in beet pulp will vary slightly but for all practical purposes and calculations five per cent is a good round figure to use. Beet pulp presses and dryers have been in use for well over half a century. The first equipment originated in Europe, principally Germany. According to our records the first beet pulp drying plant was installed in 1901 at the Lansing plant of the Michigan Sugar Company. Sixty years ago, 1901 to be exact, the Western beet sugar industry took root in Loveland, Colorado. The history of its expansion westward is common knowledge but the point I want to bring out is that in the early years, our western beet sugar industry was not particularly concerned with this by-product. It could be stored in large open pits or silos and fed to cattle being fattened in adjacent feed lots. The sugar factories were of small capacity and the pulp could be consumed during the intercampaign or by early spring. The fact that the wet pulp was bulky, nasty to transport and grew very pungent by spring didn't matter—people generally accepted the odor and the inconvenience.

The western beet sugar refiners delayed the installation of pulp pressing and drying plants until about 1912. It was slow catching on for such obvious reasons as initial plant costs, availability of equipment, and market potential. As beet acreage increased the factory capacities were stepped up, wet pulp silos were enlarged and it soon became evident that local cattle feeders and farmers could not consume all of the pulp. The wet pulp silos became a public nuisance because of the pungent odors being present year around. The wet silos were also a source of stream pollution because of the drainage going directly to streams and rivers. It became apparent that if the beet sugar industry was to continue to grow and prosper, a broad market had to be developed to dispose of the beet sugar factory's production of beet pulp and what we term "discard molasses." It was common practice to add molasses to the wet pulp because of its beneficial effects in cattle fattening. Most of the early pulp pressing and drying plants were installed because of public pressure.

Beet pulp dewatering presses and dryers originated in Europe, principally Germany. Our first dehydration plants were imported from Europe. The costs were high, deliveries were long and replacement parts were always an aggrevating problem. U. S. equipment manufacturers did not waste much time setting up manufacturing agreements. The contract agreements for design and manufacturing rights were sometimes harsh but the potential benefits of the equipment could not be overlooked and the price demanded appears to have been justified. U. S. equipment manufacturers have in my opinion, became leaders in the field of dewatering by pressing and dehydration by direct and indirect heated dryers. Dehydrators are now available for just about any product one can name. New products may require special equipment and special procedures, which if all of the facts are known or can be determined, will permit the dehydration engineer to work out an economical highly efficient plant.

We have stated that marketing and transportation have played a vital role in the expansion of dehydrated stock feeds. Fuel costs, coal, gas and oil, are of equal importance. Products like beet pulp, cannery wastes or other high water content material cannot be dehydrated profitably without help of dewatering presses. To illustrate the advantage and the fuel savings of removing water by pressing, we will cite two examples, No. 1—we will assume the initial moisture in pressed pulp to be 83% or 17% D.S. and No. 2—the initial moisture to be 78% or 22% D.S. Both calculations are based on five per cent D.S. in beet pulp as produced and 10% moisture in final dried product.

BTU savings realized by reducing the pressed pulp moisture from 83% to 78% is 127,360,000—91,520,000 or 35,740,000. The fuel savings can be computed in dollars and cents very quickly, if fuel costs are known.

There are many factors effecting the moisture content of pressed beet pulp. Dehydration calls for good pressing equipment, well maintained and supervised. Factors effecting the pressability of beet pulp are pH, temperature, diffusion process and the beet production area. It's strange but true that a beet sugar factory operator can almost spot the area beets are grown in by the pressi-

Example #1

Dry Substance or Marc in diffused beet pulp	**5%**
Initial moisture in pressed pulp	**83%**
Final moisture in dried pulp	**10%**
Pulp processed per day	**4000 tons**
BTU required to evaporate one (1) lb. water	**1600**
D.S. or Marc	**400 x .05 = 200 tons**
Dried pulp @ 10% moisture	**200 ÷ .9 = 222**
Pressed pulp @ 83% moisture	**200 ÷ (1.00-.83) = 1176 tons**
Water removed by presses	**400 — 1176 = 2824 tons**
Water to be evaporated	**1176-222 = 954 tons**
Water to be evaporated/hr.	**39.8 tons**
BTU required/hr.	**39.8 x 2000 x 1600 = 127,360,000**

Example #2

D.S. in diffused beet pulp	**5% = 200 tons**
Dried pulp @ 10% moisture	**222 tons**
Pressed pulp @ 78% moisture	**200 ÷ (1.00-.78) = 908 tons**
Water removed by pressing	**4000 — 908 = 3092 tons**
Tons water to be evaporated	**908-222 = 686**
Tons water to be evaporated/hr.	**28.6 tons**
BTU required/hr.	**28.6 x 2000 x 1600 = 91,520,000**

THE MYTH OF PITH

For years it was thought that the difficulties in manufacturing Paper from Bagasse were due to so-called "Pith"—the Ovoidal Cellulose Cells contained in Sugar Cane,—until de la Roza proved conclusively,—(by producing a Superior Quality of Bagasse Printing and Writing Papers and by Commercially Purifying Whole Bagasse—including the "Pith"—to more than 99% Alpha Cellulose content)—that the difficulties encountered with Bagasse are not due to "Pith" Cellulose but are due to what the "Pith" Cellulose contains.

Once purified, the "Pith" Ovoidal Cellulose Cells become the most valuable Cellulose Cells of the Sugar Cane,—in the manufacture of Fine Printing and Writing Papers, the Purified "Pith" Cellulose Cells, absorb more Clay and other Additives than any other Commercial Paper making Fibres—close up the sheet,—and provide a better Surface and Finish,—and for Derivatives such as Pyroxylin, Nitro-Cellulose, Smokeless Powder, etc. it is even Superior to Purified Cotton Linters.

The "de la Roza Process" removes the undesirable substances contained in the "Pith" Cellulose,—enables the use of 100% Whole Bagasse, including the "Pith",—prevents wasting approximately 35% of the Bagasse Cellulose contained in the Sugar Cane,—eliminates costly Depithers, Screens and other unnecessary and wasteful "Goldbergs", marketed by Promoters of obsolete Machinery and Processes,—and produces the Highest Quality of Cellulose Products with Maximum Yield and Lowest Costs.

Whether you wish to purify Bagasse for the manufacture of Paper or Plastics,—
"THE BEST RESULTS ARE OBTAINED USING THE DE LA ROZA PROCESS"*

We will study your project promptly and thoroughly,—design your Mill carefully,—supervise its construction,—equip it with the most efficient machinery,—train your own native operating personnel,—start up your Mill initially,—assist you in organizing your Sales,—and grant you a License to our Basic Patents, all at lowest net cost to you,—because we are—

"THE WORLD'S LEADING BAGASSE ENGINEERS"

With the longest and most successful experience in the field,—owners of the only process that enables the UNIFORM purification of Bagasse Cellulose to 99.3% Alpha Purity,—and with the highest references from Official United States Government Committees, Government and Commercial Laboratories and many other Experts.

*A study of newsprint expansion, a process report by the United States Department of Commerce to the Committee of Judiciary, House of Representatives (U. S. Printing Office 1952).

The Pioneers in Bagasse Processing

DE LA ROZA
CORPORATION

441 Lexington Ave., New York, N. Y.

bility of the pulp. A factory may operate for days with pressed pulp moisture of 80% when suddenly it may change to 83 or 84% for no apparent reason except that the beets are coming from a different area.

Dried beet pulp, like dried forage crops and a large variety of stock feeds is being produced in several forms, each for a specific purpose or method of feeding.

1. Plain pulp, without additives, is delivered in bulk or bags.
2. Molasses pulp with varying amount of molasses added to wet pressed pulp before drying. Dried molasses pulp is not sticky. Handles like plain pulp and is delivered in bulk or in bags.
3. Plain and molasses pulp, supplemented with special additives to provide special qualities demanded of stock feeders.
4. Pelletized plain and molasses pulp is suitable and recommended for most types of stock feeding. Pelletized pulp weights 43 to 45 lbs. per cu. ft. as compared with 12 to 15 lbs. for plain pulp and 18 to 21 lbs. for molasses pulp. There is no loss in the feeding of pellets and cost of transportation is considerably less than the bulkier forms.

The success attained by the manufacturers of dried beet pulp attracted the attention of other stock feed producers. As stacked forage crops gave way to the hay baler, so the hay baler has had to give way to the dehydrators. The dehydration of forage crops, Alfalfa, grasses and other green crops, has gained rapidly in popularity for all types of stock feeds. Sun curing of forage is detrimental to many of the vital elements in the grasses. To save these elusive elements, it is necessary to dry the grasses as quickly as possible after cutting. Special combination mowers, grass cutters and loaders are now available to get the job done quickly and economically. Alfalfa drying is big business in California where five crops are harvested each year. The big alfalfa mowing machines with integral choppers and storage bins more swiftly through the hay field stopping only long enough to discharge their loads into trailers at the end of the field. When two trailers have been filled, a truck comes up the lane to rush the trailers with 24 tons of freshly cut alfalfa to the dehydration station.

The freshly cut alfalfa or other forage crop is fed directly into the heat dryer. The moisture content will be in the range of 80% to 85% moisture. The drying air entering the rotary dryer may range from 1000°F to 1475°F with the moisture laden air leaving the drum at 300°F to 375°F. The final moisture in dried alfalfa will be on the order of 8% to 10%. Alfalfa is not burned or scorched by the high temperature drying air because the drying drum is under a high negative pressure, induced by a fan on the discharge end of the dryer—as a particle becomes dry it is picked up by the current of swift air and quickly drawn through the drying drum. The large pieces, for example, coarse stems move through more slowly, however, because of small compartments and design of the lifters in the Stearns-Roger rotary drying drum. The material is constantly in motion, which prevents scorching and loss by burning. The dried product retains its natural color, essential elements and fat soluble vitamins.

Stock feeds prepared from forage crops are distributed in several forms of meal, plain or supplemented and in pellet form. Pelletized feeds appears to be taking a commanding lead in the market. The cost of pelletizing is more than offset by the savings in transportation, labor for handling and feeding and the loss in feeding is negligible. At least two West Coast dehydrating companies are exporting large tonnages of pelletized beet pulp and alfalfa to Japan and Hong Kong each year.

A good dehydration plant can be not only profitable, but a valuable asset to the community. Food manufacturing plants should analyze their wastes as possible sources of stock feed. Disposing of these wastes may present a serious sanitation problem as well as being costly. It is entirely possible that the wastes which are now being disposed of at a cost and under a great deal of inconvenience and annoyance, can be changed over to a profit product.

ROIG ★★★★★ STARLIGHT SUGAR

Central Roig Refining Company and the Sugar Technologists Association of Puerto Rico move ahead together in the quest for new methods and advancements in sugar technology.

Humacao and Yabucoa
Puerto Rico

Greetings to the 1961 meeting of the Sugar Technologist Association of Puerto Rico

Thomson-HurryCane power driven ro-tiller effectively pulverizes soil in land preparation prior to planting. Eliminates multiple passes required with conventional cultivators in off-barring and dirting-back and in weed and grass control. Perfect for aeration of soil and mixing-in trash-mulch.

First in Puerto Rico

with proven mechanization for production economies

Thomson-HurryCane, with specially designed tractors and sugar cane machinery, initiated the modified Louisiana system successfully used in Puerto Rico and continues to lead the way to larger crops, lower costs. Thomson-HurryCane tractors, plows, cultivators and loading equipment are built specifically to withstand constant, heavy duty cane field operations. Rugged, dependable Thomson-HurryCane equipment assures maximum efficiency and productivity at minimum cost. Let your Thomson-HurryCane dealer demonstrate the cost-saving and production effectiveness of HurryCane equipment.

One-man operated Thomson-HurryCane all-hydraulic cane loaders have positive grab, lift and swing control. Operator location assures 100% visibility of all loader operations. Loaders are easily mounted and removed from any tractor. Available with grab capacities of 750, 1500 and 2000 pounds.

Cable or side hoe attachment for HurryCane loader permits year around utilization of loader for efficient power digging and cleaning of lateral ditches.

Thomson HurryCane

THOMSON MACHINERY CO., INC. • THIBODAUX, LA. U. S. A.

ANOTHER DIVISION OF LAMB INDUSTRIES, INC., TOLEDO, OHIO, U. S. A.

NEW YORK, OCTOBER 27, 1961: The U. S. Department of Agriculture on October 23rd reduced the 1961 non-quota authorization of India by 50,000 tons; Brazil 30,000 tons; and Taiwan 20,000 tons. Unlike the 30,000-ton reduction in Peru's authorization on October 13th, which was voluntarily agreed to by Peru, the new cut apparently was made without consulting the respective governments, B. W. Dyer & Company, Sugar Economists and Brokers, report.

In explaining its action, the Department stated: ". . . although the average price for raw sugar at New York for the year to date is about the same as the annual average price in 1960 and higher than that of earlier years, raw sugar prices in recent months have been well below average and are below a desirable level for this period of the year.

"In view of geographical and other relevant circumstances affecting raw sugar supplies, it would be appropriate for inventories in the hands of refiners to be larger at the end of 1961 than those held at the end of recent years. Nevertheless, to encourage the purchase of raw sugar at prices which will equitably maintain and protect the welfare of the domestic sugar industry, it appears necessary to reduce the supplies of offshore raw sugar . . ."

Based on this action, Dyer estimates that the apparent effective 1961 quota now is slightly over 9,800,000 tons, although some additional shortfalls, such as from the Philippines, are expected. However, unless the Department of Agriculture makes further cuts in quota or non-quota sugar, it appears that cane refiners' stocks should increase at least 200,000 tons on December 31, 1961 over the 1960 year-end, because 1961 refined sugar deliveries are not expected to exceed 9,500,000 tons.

Beet sugar production was delayed by adverse weather in some areas, and early returns indicated poor sucrose content. However, even if the yields should be as low as in 1959, when the sucrose content was only 13.75% in contrast to a ten-year average of 14.70%, the current beet crop should produce at least 2,600,000 short tons, raw value, of sugar, which would be enough to fill the 1961 marketing quota and keep year-end inventories at last year's above-normal level of approximately 1.5 million tons.

Northeastern refiners on October 24 generally announced a $.15 advance to $9.30 on 100 pound bags and a $.20 increase on bulk and liquid sugar, but accepted day-to-day business for delivery through November 22nd at the old prices. Thus, the reductions, which had become effective on October 9th, were restored. In the Southeast, prices were reduced $.10 on October 18th, making the 100 pound bag price $9.00 in that area.

Sugar Prices—October 27, 1961

Duty Paid Bulk (#7)	
Raw Sugar N. Y.	**6.30**
Average #7 Raw Sugar Jan. 1st to October 27th	**6.28**
Refined Sugar Gross N. Y.	**9.15**
#8 Raw Sugar (f.o.b. and stowed)	**2.65**
Average #8 Sugar Jan. 1st to Octboer 27th	**3.00**

Futures	*Contract #8*	*Contract #7*
January 1962	—	**6.20**
March 1962	**2.63**	**6.31**
May 1962	**2.62**	**6.31**
July 1962	**2.68**	**6.35**
September 1962	**2.71**	—
October 1962	**2.71**	—

Frank C. Staples, president of American Molasses Company (now SuCrest Corporation), in October issued the following statement: "I referred in our Annual Report to Shareholders to the intense competition in the sugar refining industry. This is attributable to excessive cane sugar refining capacity in the United States and also to the rapid growth in recent years of the United States beet sugar industry. Every ton increase in beet sugar production increases the excess of cane sugar refining capacity by a corresponding amount. These factors have narrowed the margin between the costs of our raw material, namely cane raw sugar, and the sales price of refined cane sugar so as to reduce profits of all sugar refiners, including your Company, to a very unsatisfactory level. Some cane sugar refiners are on the verge of losses or are actually suffering losses. . . . Under the existing circumstance, we are leaning to the idea that cane sugar refiners of the United States should act in concert through all of those interested people, such as industrial users of sugar and other consumers, to discourage any re-writing of the Sugar Act which would injure or destroy the cane sugar industry. Failing this, to recommend the abandonment of all forms of sugar legislation so that the industry may be placed on a free and competitive basis . . ."

World (#8) spot raw sugar prices, which reached a 1961 high of 3.42¢ per pound on May 24th, declined rather persistently after that and reached a low of 2.57¢ on September 20th. They then rallied to 2.85 on September 26th, but then declined sharply when it became apparent that nothing would be accomplished at the International Sugar Agreement meeting, and were 2.60 on October 24th.

The Board of Managers of the New York Coffee and Sugar Exchange have approved a new world contract (#9), which includes a few more countries than the #8 contract and also permits the delivery of West European and Polish beet raws through Dunkirk, Hamburg and Antwerp. If ratified by members on November 2nd, the plans call for trading to start on November 6th.

The International Sugar Agreement meeting, which started in Geneva on September 12th, was doomed to failure early in the session, when the U. S. opposed the Soviet suggestion that U. S. imports be made part of world quotas. It was pointed out that U. S. supply actions must be taken immediately and with finality and could not wait for the International Sugar Council to determine whether or not supplies will be made available.

President Dorticos of Cuba on October 4th announced from Moscow that his country had concluded agreements for the sale of at least 4,860,000 tons of sugar annually to the Red bloc from 1962 to 1965. This compares with 4 million tons sold to the Reds in 1961, and again presumably would be on a barter basis.

Cuba then insisted that the Red purchase be included in its 1962 quota, which would

boost it to about 7.3 million tons. The other countries would not agree to this, and the deadlocked conference adjourned on October 23rd. The delegates are scheduled to reconvene the last week in November to try to break the impasse.

F. O. Licht's first estimate of 1961/62 sugar production in West Europe was placed at 7,880,000 metric tons, raw value, versus 10,766,000 tons in 1960/61. Production in East Europe was estimated at 12,303,000 tons against 11,781,000 last season. (In July, B. W. Dyer & Company estimated that, if normal yields were obtained, 1961/62 sugar production in Western Europe would decline about 2.5 million tons, while Eastern Europe might increase ½ million tons).

Louisiana Crop Progress Satisfactory

New Orleans, November 3, 1961: The 1961-62 Louisiana grinding season got off to a fine start during the second week in October and has continued at a rapid rate up to this writing. The weather has been exceptionally dry throughout the entire month and the production of cane per acre and sugar per ton of cane has been very encouraging. Some mills were grinding cane at the start of the season this year which was higher in sucrose than the canes milled last year in mid November. Unless very adverse weather is encountered in November and December it appears to be almost a certainty that the 1961-62 Louisiana sugar production will be the highest on record.

Word has been received from the Sugar Division of the U.S.D.A. that no proportionate shares (acreage restrictions) will be imposed on the 1962 Mainland sugarcane crop. The Department has voiced a mild warning, however, regarding unlimited expansion in its Statement of Bases and Considerations and we quote the following paragraph covering this matter.

"Since the date of announcement of nonrestrictive acreages for the 1960 crop, considerable expansion in sugarcane acreage and processing facilities has occurred in the Mainland Cane Sugar Area, principally in Florida, and further expansion is planned. Two additional mills in Florida are scheduled to begin operating during the coming crop season but will process considerably below capacity. It is understood that the operators of these mills plan to have sufficient cane to greatly increase processings in the fall of 1962. In addition, two larger mills will begin processing sugarcane in the fall of 1962. Reports indicate that consideration is being given to the erection of two more mills, but even if these are erected, they probably could not be ready to process cane in the fall of 1962. This expansion is occurring despite recognition by those involved that substantial cutbacks in acreage might be necessary in future years. The possibility of such cutbacks has been set forth in regulations issued by the Department for the last two crops and in correspondence with many of those engaged in the expansion. Indications point to a 1962-crop planted acreage in Florida about 65% greater than for the last restricted crop (1959) and in Louisiana about 14% greater."

The wage rates for harvesting the 1961 cane crop and cultivating the 1962 crop were issued by the U.S.D.A. on October 30th. The new determination calls for a five cents per hour increase in wage rates in all categories. At the wage hearing held in Thibodaux, La. on August 2nd, spokesmen for the industry recommended that no increase in wages be granted this year but the Government did not go along with this request. The following paragraph from the official determination explains the position taken by the Government.

"An analysis of returns, costs, and profits of sugarcane production and other relevant factors indicates that the increase in the wage rates provided herein are fair and reasonable and within the ability of producers to pay. As pointed out by a witness at the hearing man-hour requirements per ton of sugarcane have decreased during the past

Don't Risk Evaporator Slow Down!

THE WRIKORGS

Assure Top Production at the Lowest Cost!

*Here's Proof:**

1 "Compared with last year, when we did not use any Wrikorgs, we ground 282,000 more arrobas before our first clean-out, even though all of the cane ground last year was from the field and 80 percent of this year's cane was "burned".

2 "We have used Wrikorg since 1948. Runs without Wrikorg used to be approximately 14 days, during the present crop we have run up to 28 days."

3 "I have found our apparatus functioning in perfect order and without any interruption during a period of 21 days with increased maceration in the grinding process and constant pumping of the sirup between 28 and 30 degrees Beaume. Cleaning was quick and easy, and the quadruple was completely clean. Another consequence is great savings in acid and potash, and decrease of equipment wear by about 40 percent."

*Company names and details upon request.

Just as they have done for those above, and many others, Wright Engineers will make an analysis of your water and juice problems and recommend the proper solution for you...without cost or obligation. Wire or write today for immediate service this season.

Wright CHEMICALS

WRIGHT CHEMICAL CORPORATION

GENERAL OFFICES AND LABORATORY

1319 WABANSIA AVE., CHICAGO 22, ILL.

Offices in Principal Cities

- Softeners, Filters and other external Treating Equipment
- Nelson Chemical Proportioning Pumps

decade as a result of technological improvements in sugarcane production. During this period producers voluntarily have paid higher wages to fieldworkers and minimum wage rates have been increased periodically. The wages rates of this determination, which compare favorably with general farm wage rates in Louisiana, also recognize improvements in labor productivity."

The Louisiana sugar producers, for the first time since World War II, are finding it necessary this year to sell a considerable quantity of raw sugar on the spot market. In previous seasons, almost 100% of the crop has been sold at season's average prices but this year the National and Colonial Refineries decided not to purchase Louisiana raws on that basis.

Together National and Colonial have contracted in previous years for the entire output of ten Louisiana mills and part of the production of four other mills. Their decision to abandon this practice came as quite a shock to the local sugar producers.

American, Imperial and Supreme, the other refiners who traditionally contract for Louisiana raws on an average price basis, have continued as usual but have not been in a position to take up much of the slack created by the change in policy of National and Colonial. This has made it necessary to sell sizable quantities of Louisiana raws on the "spot" market.

Through October 30th, 33,500 tons of Louisiana raws have been sold at a spot price. National has been the largest buyer in the spot market with 17,000 tons and American is next with 12,000 tons. Henderson has purchased 3,000 tons and Colonial 1,500 tons.

The Henderson Sugar Refinery plant at New Orleans is closed down and we understand that arrangements have been made with another Louisiana refinery to produce the Henderson brand of sugar until a new plant is erected at Mobile, Alabama.

A sugarcane short course will be offered during the week of January 15-20, 1962 at Louisiana State University. The course is being offered as a result of requests by the American Sugar Cane League and is primarily for growers, managers and overseers but anyone interested in learning more about the many technical practices required in producing a sugarcane crop is welcome to attend the courses which will include *Explanation of Experimental Procedures* by Dr. M. T. Henderson, *Land Preparation and Drainage* by Mr. I. L. Saveson, *Planting Sugar Cane* by Dr. T. J. Stafford, *Cultivation* by Mr. E. C. Simon, *Fertilization* by Dr. Laron Golden, *Soil Testing, Organic Matter and Lime* by Dr. W. J. Peevy, *Weed Control* by Mr. E. R. Stamper, *Insect Control* by Dr. W. H. Long, *Disease Control* by Dr. R. J. Steib, *Cane Quality* by Dr. A. G. Keller, *Harvesting* by Dr. Denver T. Loupe, *Machinery Maintenance and Safety* by Mr. Mansel Mayeux, *The Importance of Cost* by Dr. Joe Campbell, and *Sugar Cane Breeding* by Dr. S. J. P. Chilton.

J. J. Munson, President and Chairman of the Board of The South Coast Corporation announced on October 25th that Roland L. Toups, Vice President in charge of Operations, had been promoted to General Manager. Mr. Toups is now Vice-President and General Manager of South Coast.

Mexico Starts Harvest Early

MEXICO CITY, OCTOBER 12: The accent in Mexico is for expansion of sugar production to new peaks. The National Union of Sugar Producers stated that goal for 1964 is definitely set at 2,060,000 metric tons.

Production of the current cycle is around 1,400,000 tons, with final figures still unavailable. This is about seven percent less than in the past cycle, with the Union attributing this to less acreage in cane and losses caused by the elements.

However, prospects for the 1961-62 cycle are "most promising," because of the early rains, and estimates set crop at 1,650,000 tons, in round figures, with mills grinding approximately 18,458,000 tons of cane.

Production increases are expected in states of Veracruz, Jalisco, Michoacan, Tamaulipas, Morelos, Puebla and Oaxaca, with first named expected to account for 63% of total estimated upward boost.

In order to meet sugar quotas it has assigned in the international market, Mexico advanced date of the 1961-62 cycle, for the first time in the history of the industry. Grinding of cane began in early October, and not in December as has been the custom.

Although the 1960-61 crop was around 100,000 tons less than that of the previous year, the industry and union officials feel that prospects for future have never been better. Surpluses virtually do not exist, and plans are in operation to put all 72 mills existing in the country to work so that internal and external needs can be met. Closed down smaller mills may be reactivated.

Mexico is curtailing somewhat sales of sugar to European markets, to hang on to small surpluses. But as the new cycle gets under way, the official attitude is that there will be no shortages domestically. It is pointed out that the San Cristobal and San Gabriel mills will produce a minimum of 185,000 tons between them, with this valued at no less than 230 million pesos ($18,400,000), apart from added sums from alcohol and non-crystalized sugars produced.

Only weak point, according to the Union, is that sugar quotations on international market are "invariably inferior" to those in the domestic market. A spokesman for the Union said that the United States offers the best market for Mexican sugar, with premiums above those paid by nations affiliated with the International Sugar Pact.

Minimum Wage In Puerto Rico

SAN JUAN, OCTOBER 30, 1961: A new minimum manufacturing wage of $1.095 per hour for the sugar industry will be effective on November 3rd, 1961. All sugar mills paying less than $1.095 per hour should make proper adjustments. Sugar Producers Association suggests that any salary increase required for the lowest classification would be extended across the board to all other classifications.

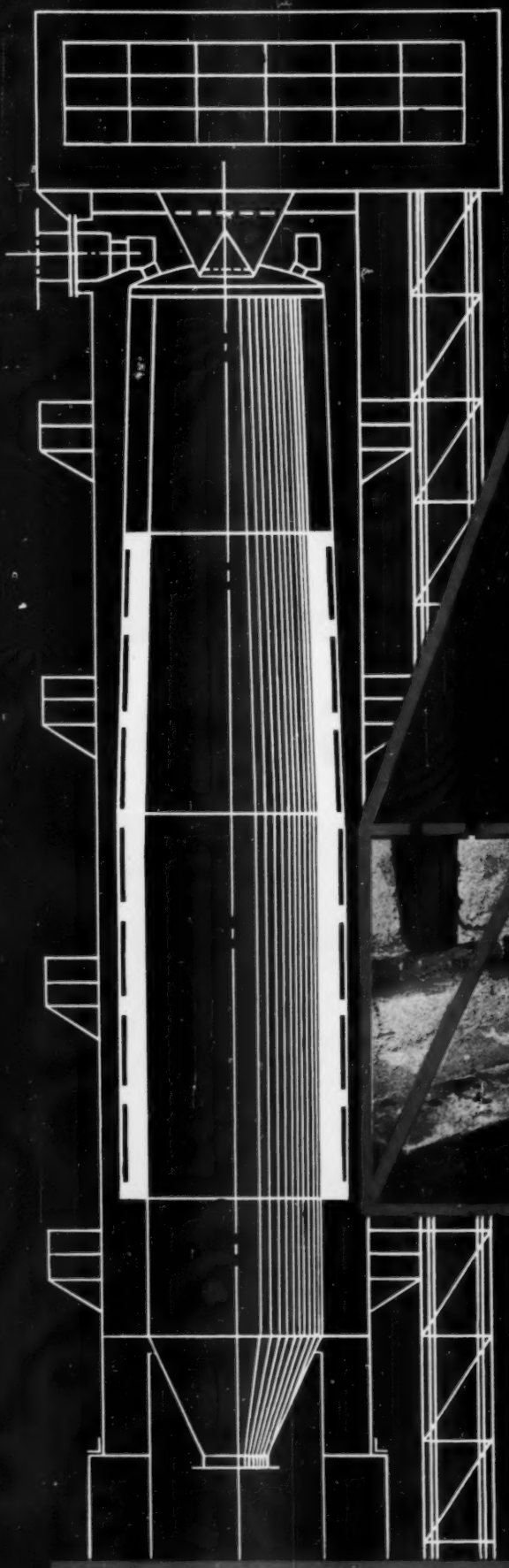
Minimum salaries to be paid to agricultural workers have not been fixed as yet. Public hearings have been conducted by the Board for Minimum Wages, with the attendance of Raul J. Tous, representing the Department of Agriculture; Fernando Chardón, for C. Brewer Puerto Rico, Inc.; Aureo García, representing Bianchi Agricultural Community; Lcdo. Raul Mendez, for Ochoa Fertilizer Corporation and Lcdo. Juan T. Peñaagaricano, a director of the Federal Bank and member of the Economic Stabilizer Administration. The Board for Minimum Wages will announce agricultural salaries before starting next sugar crop.

The Land Authority is taking advantage of Central Aguirre Sugar Company technical advice in order to improve centrals Cambalache and Plazuela. Harold Willett, Aguirre executive and engineer, will be in-charge of the work.

The Agricultural Experiment Station of the University of Puerto Rico has authorized commercial plantings of variety P.R. 1048; its sugar per acre yield compares favorably with other varieties. P.R. 1048 is distinguished by peculiar qualities such as great vigor, high percentage on germination, plenty of sprout and sucker, high sugar yield and resistance to common cane diseases. The Experiment Station calls attention to the fact that P.R. 1048 is sweeter and thicker than P.R. 980. It does not have the same resistance qualities of P.R. 980 to poor climate and soils, but it has been shown that P.R. 1048 fits up well in almost all sugar cane zones in the Island. Its best yields have been reached under irrigation in the south coast. Ratoon yields are lower; it is difficult to exceed the ratoon capacity of P.R. 980. About 1,000 tons of seed-cane P.R. 1048 would be available next month to sugar cane planters at the Land Authority and in the Agricultural Experiment Station seed-farms. Growers are advised to make trial sowings in small lots to check production and adaptability before cultivation on a commercial scale.

All 1960 raw sugar shipments to the U. S. were in bulk through the following

(*Continued on page* 52)



Reserve capacity against thermal overloading — trouble-free kiln operation without sticking or caking — particularly high resistance to abrasion — longer lining life — fewer intermediate repairs — increased kiln output — improved quality of the product are the main advantages of our

ANKRAL

Special Magnesite Bricks

Superior raw materials, most up-to-date manufacturing plant, comprehensive quality control and our own scientific research are your guarantee for the excellence of our products. Thanks to their technological properties our Special Magnesite Bricks are

HIGHLY ECONOMICAL

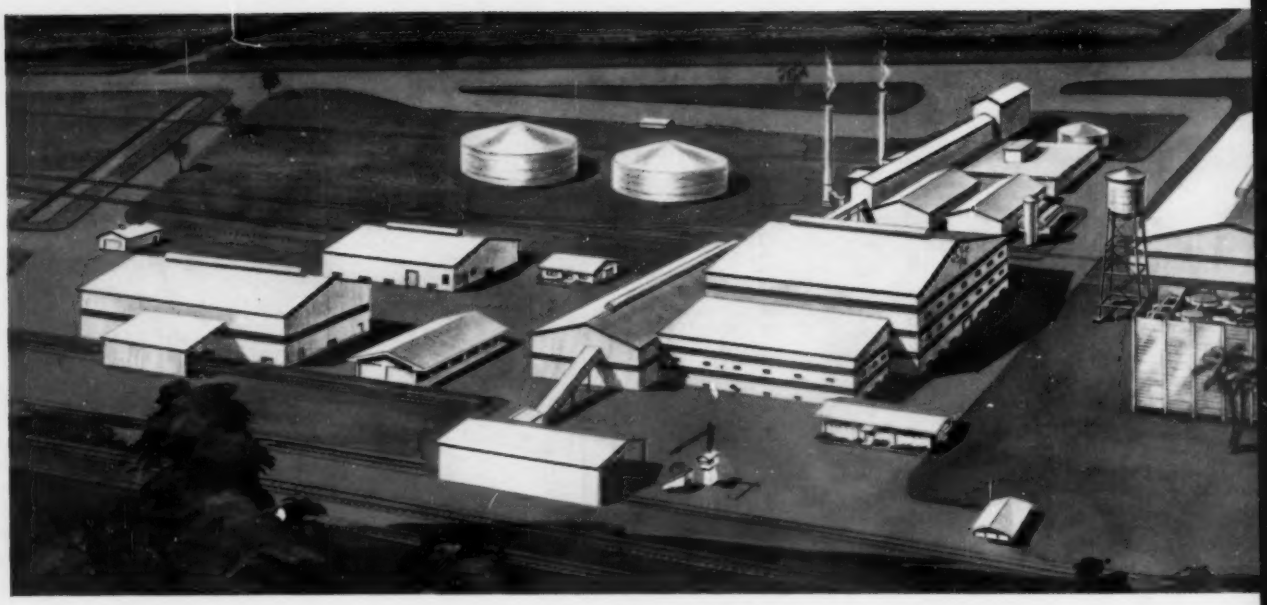
in shaft kilns and rotary kilns

VEITSCHER MAGNESITWERKE-

Actien-Gesellschaft, Vienna-Austria

General Sales Office Refractory Products Limited
Post Office Box Basle 2 Switzerland

Agents for: U. K. – John Le Boutillier Ltd., 3, Regent Street, London S. W. 1

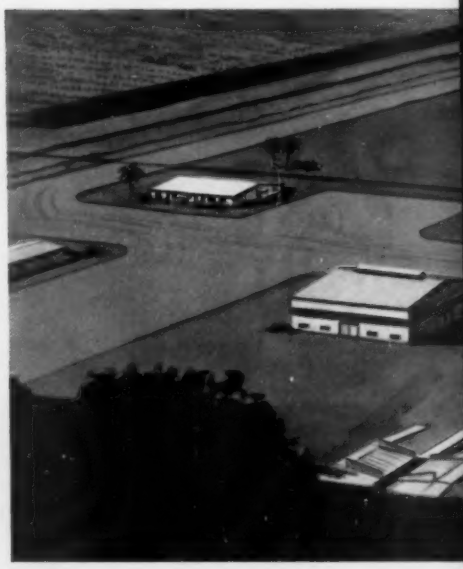


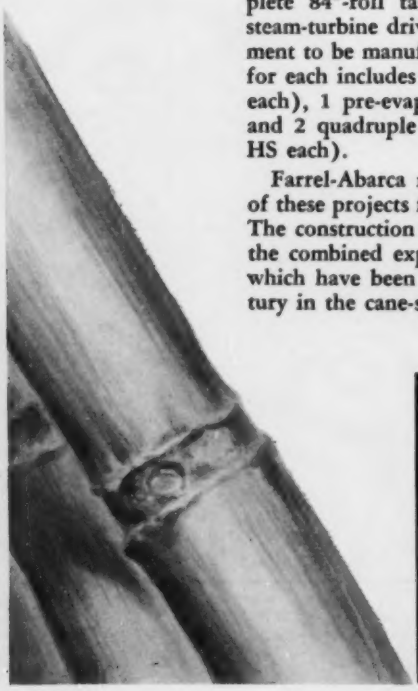
FARREL-ABARCA NOW BUILDING TWO

These artist's conceptions represent two new sugar houses presently under construction on the eastern shore of Florida's Lake Okeechobee. Although separate projects, they have more in common than their location. Both will be handled by Farrel in association with Abarca. Both will incorporate the most modern equipment available.

Farrel will supply, for each of the houses, a complete 84"-roll tandem with reduction gears for steam-turbine drive and two sets of knives. Equipment to be manufactured and furnished by Abarca for each includes 4 vacuum pans (2,000 cubic feet each), 1 pre-evaporator (10,000 square feet HS) and 2 quadruple evaporators (35,500 square feet HS each).

Farrel-Abarca responsibility includes all aspects of these projects from ground-breaking to start-up. The construction of both houses will benefit from the combined experience of these two companies, which have been associated for nearly half a century in the cane-sugar industry.



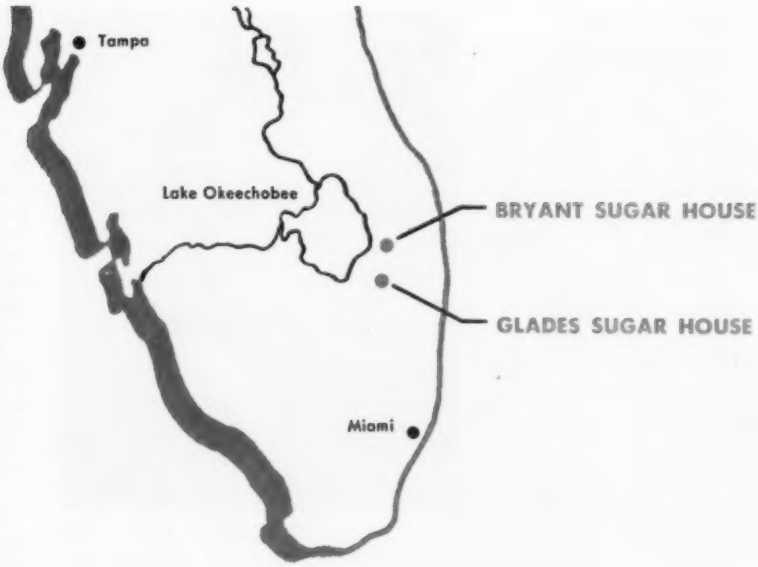


FACTS AT A GLANCE

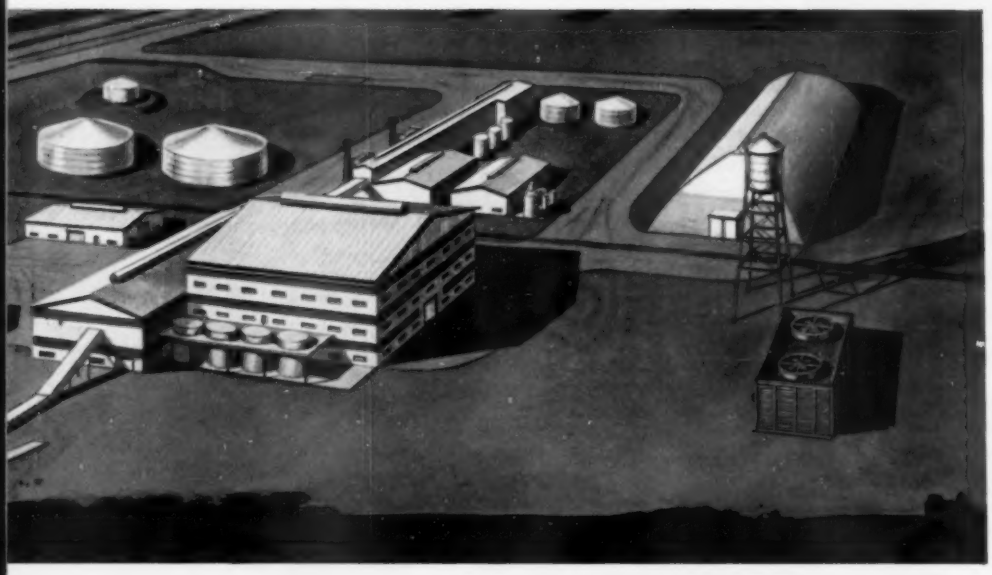
	BRYANT HOUSE	GLADES HOUSE
Ground Breaking:	April 8, 1961	Oct. 2, 1961
Capacity:	5000 tons	5000 tons
Owners:	U.S. Sugar Corporation	Sugar Cane Growers' Cooperative
Start-up:	Nov. 1962	Dec. 1962
Designing Engineer:	Dr. A. G. Keller, Inc. Baton Rouge, La.	Arkel Engineering Corporation

BRYANT SUGAR HOUSE

Part of a 16 million dollar expansion program by the United States Sugar Corporation, this sugar house is being built in Pahokee about 35 miles east of the corporation's present factory in Clewiston. Bryant is scheduled to go into operation in November, 1962, with an initial capacity of 5000 tons of cane per day. As equipment is added, capacity will increase to 8500 tons.



5000-TON SUGAR HOUSES IN FLORIDA



GLADES SUGAR HOUSE

Owned by Sugar Cane Growers' Cooperative of Florida, this sugar house is located on the airport road, northeast of Belle Glade. It is scheduled to be completed in time for the grinding season beginning in December, 1962. It will have an initial capacity of 5000 tons of cane per day but, as with Bryant, design permits for increased capacity with the addition of equipment.

FARREL®

ANSONIA, CONNECTICUT, U.S.A.

ABARCA

SUCESORES de ABARCA, INC.
MIRAMAR, SAN JUAN, PUERTO RICO

FB-1229

Facts About Sugar

(*Continued from page* 48)

four port terminals operating in the Island: Central Aguirre Sugar Co., 150,068; South Puerto Rico Sugar Corp., 117,913; Sugar Service Corp. of San Juan, 190,604; Aguadilla Terminal, Inc., 284,614 tons.

All available raw sugar for 1960 amounted to 1,040,089 tons: 895,778 were shipped to continental U. S.; 110,289 for local market; 5,614 to miscellaneous; leaving a carryover in the amount of 28,408 tons.

Hawaii Again Over Million Tons

HONOLULU, NOVEMBER 3, 1961: American Factors, Ltd., one of Hawaii's Big Five sugar agencies, has announced the purchase of all the assets of a sugar estate and the controlling interest of another plantation and cane mill, in Uruguay, South America.

A new subsidiary organization, Hawaiian Antilles, N. V., has been formed to purchase the assets of La Azucarera Rioplatense, S. A., a sugar growing corporation, and the controlling interest in Compania Agricolae Industrial de Norte, S.A., a plantation and factory.

The two properties are near the town of Bella Union in the province of Artigas, which borders on Brazil and Argentina.

The properties produce 8,000 to 10,000 tons of sugar annually. American Factors hopes to stabilize production at 10,000 tons annually within two or three years, and plans future expansion.

Philip F. Conrad, formerly assistant manager of Oahu Sugar Co., near Honolulu, is managing director of the new Uruguay project.

Officers of the subsidiary, Hawaiian Antilles, are: C. Hutton Smith, president; H. A. Walker, Jr., executive vice president; L. A. Faye, H. C. Eichelberger and J. E. Ednie, vice presidents; A. A. Hartman, treasurer; James T. Witten, secretary.

Preliminary investigation of the properties was conducted by Sugar International, a joint venture of American Factors Associates, Hawaiian Dredging & Construction Co. and J. H. Pomeroy, Inc. of San Francisco. HD&C is participating in the project.

Hawaii's 1961 production will be the highest in four years. At the end of October, production had exceeded 1,040,000 tons of raw sugar. The official estimate for the year is 1,100,000 tons.

Hawaii's original U. S. quota for mainland delivery was 1,215,410 tons. As this tonnage will not be produced, the U. S. Department of Agriculture reallocated part of the total.

However, this has been a good production year for Hawaii, in comparison with the past three years. They have been suffering from the effects of a four-month labor strike in 1958 when cane could not be irrigated or fertilized.

Philip F. Conrad, Managing Director, Hawaiian Antilles, N.V., new American Factors sugar operation in Uruguay.

Alexander & Baldwin, Inc. one of Hawaii's Big Five sugar agencies, will merge with its large Hawaiian Commercial & Sugar Co., Ltd. to form one corporate structure. At the shareholders meeting where approval was given to the merger, the name of A&B was changed from "limited" to "incorporated." (This has been a common change in Hawaii since statehood.) Merger of A&B & HC&S is scheduled for December 29. Authorization has been given to increase A&B capital stock from 2¼ million to 3½ million shares.

The drought which has plagued Hawaii Island plantations for months seems to have been broken. As yet, there is not adequate water in the Kau section of the Big Island, but there has been an improvement in conditions.

Unusually dry weather in the Islands has also hit the Hawaiian Commercial & Sugar Co. on Maui. It is estimated that at least 10,000 tons of raw sugar production will be lost from the 1962 crop as a result of shortage of irrigation water.

All domestic users of water on the plantation ditch systems were asked to stop watering their lawns. And, the plantation set an example by stopping irrigation of lawns around the main office.

Manager E. B. Holroyde said the water shortage at HC&S has forced a stretch-out of field irrigation intervals to "twice as long as we would like."

The other two plantations on Maui report no unusually short water conditions. They get their irrigation water from a different section of the Island.

The International Longshoremen's and Warehousemen's Union, which unionized the Hawaiian sugar industry, and the big Teamsters union on the U. S. mainland, have announced plans to organize sugar beet workers on the West Coast of the mainland.

The Hawaii union is seeking a way out of a price vice on Hawaiian sugar, resulting from heavy competition on the U. S. mainland with beet sugar. Wages and fringe benefits in the Hawaiian industry are at least $1.00 per hour more than field workers in the beet industry receive. This is the cause of serious concern to the Hawaiian union which has been responsible for pulling up pay rates to record highs.

Union leaders admit that there will be a big fight when they move in to organize the beet sugar industry. But, tie-up with the strong and hard-battling Teamsters, means there can be rough days ahead for beet growers.

U. S. Congressman from Hawaii, Daniel K. Inouye, says the impending sugar act legislation battle in the next session of the Congress "could make or break Hawaii." He says the Western beet growers are putting on pressure to get the Cuban sugar quota. If they are successful, Hawaii's markets in the Western part of the U. S. mainland will be drastically reduced.

The International Longshoremen's & Warehousemen's Union, which controls labor on Hawaii's plantation, has agreed to extend its present two-year agreement with the sugar companies for an additional year —but for a price. The price is 10¢ per hour wage increase for all workers and higher pensions and other benefits.

The Hawaiian industry is in no mood to increase costs, as it appears that 1961 may be one of the bleakest years they have had, financially.

John Murphy, chairman of the industry's negotiating committee, said his first reaction to the proposal is that "the cost seemed to be extremely high."

The current union contract expires February 1, 1962.

Alexander & Baldwin, Inc., one of the Big Five sugar agencies of Hawaii, has a problem.

In the recent liquidation of Honolulu Oil Co., A&B received well over $24,000,000 in cash.

There is no indication as to what investments A&B will make with this huge sum of money. If it should go into sugar, it is likely to be abroad. It appears obvious that no major expansion of the Hawaiian industry is practical. However, A&B could buy-out some existing Hawaiian Companies.

The fly ash problem from Pioneer Mill Company's boiler system is expected to be substantially reduced with the completion of a new steam and power modernization program.

(*Continued on page* 59)

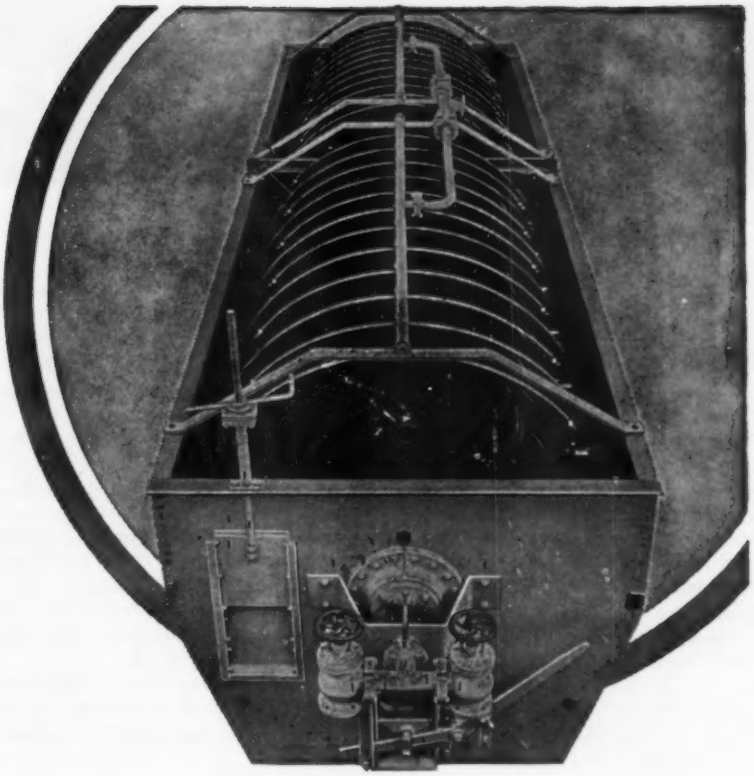
More than 500

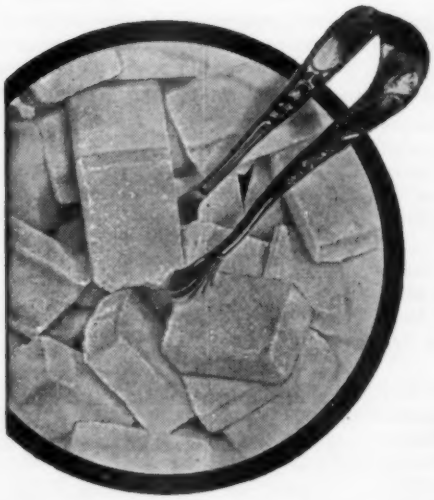
WERKSPOOR

Rapid Crystallizers

in use in

sugar factories





Applications for high grade as well as for LOW GRADE massecuites!

Licensees for the manufacturing of Werkspoor Rapid Crystallizers:

Ansaldo - San Giorgio
Genoa - Italy

Atlantic, Gulf and Pacific Company of Manila, Inc.
Manila - Philippines

Maschinenfabrik Buckau R. Wolf A.G.
Grevenbroich - Germany

Fives Lille - Cail S.A.
Paris - France

Honolulu Iron Works Co. Inc.
Honolulu - Hawaiian Islands

Honolulu Iron Works Co. Inc.
New York - U.S.A.

A. & W. Smith & Co. Ltd.
London - Great Britain

Succesores de Abarca Inc.
San Juan - Puerto Rico

WERKSPOOR

Sugar's Progress in

HUMAN RELATIONS

Roy J. Leffingwell

Understanding Employe Apathy

There is a world-wide cry today that sugar workers are apathetic, indifferent and don't care about being involved in their jobs. Dr. Chris Argyris, a social scientist of Yale University, may have made a breakthrough on new knowledge of this subject. Ironically, he finds that management practices may be the major cause of worker apathy.

Dr. Argyris says money and job security are basic requirements in our economic world, especially to employes at the lower end of the organization totem pole. But, it is increasingly apparent that money and job security are not prime motivators to many workers today in the more advanced economies whose needs are fairly well satisfied.

Research studies are cited by Dr. Argyris to show that once these basic needs are met, the next needs are for self-actualization, self-expression and self-esteem. The energy that comes from these needs is tapped as man is given the opportunity to use his intelligence and abilities to deal with others to achieve responsibility, self-control and a sense of internal commitment while at work.

Management has been attempting to meet these more complex needs with vacations, correct selection and placement, effective training, etc. In short, they have been trying to see that the employe is treated so that he will be happy in his job.

These are laudable steps, says Dr. Argyris, but he emphasizes that human productivity and growth are not necessarily correlated with pleasure and happiness.

It must be made clear that there are two broad types of employes; the immature and submissive, and mature.

Immature employes may like the formal organization of the present company, and the dependence upon others. But, the mature employe aspires to relative independence, self-responsibility and self-control.

He does not get these things in the average business organization today, so he rebels. He either openly "fights" the organization or "accepts" conditions by being apathetic and non-involved. It is easy to pick out the individual who is openly fighting the organization, but the fellow who merely accepts conditions is harder to uncover.

To accept the situation, and remain in the organization and produce, mature employes may resort to any one of a combination of the following mechanisms, says Dr. Argyris: absenteeism; trade unionism; indifference; rate setting; goldbricking; demanding more and more money as a price of being required to work in such a world, and so on. In short, they slowly but surely change from individuals who *give* of themselves to individuals who *give up* themselves.

By adoption of some of the above mechanisms mature employes are able to release their internal tensions and avoid frustration. In this way, they are able to produce what the company asks of them. In other words, apathetic behavior can actually spring from a sense of responsibility to the organization—the realization that only by acting in this manner can the employe "live" with it and meet its demands.

Dr. Argyris points out that the great trouble is that after years of apathy and indifference, a man's capacity for productive and creative work decreases. His adaptive behavior ultimately becomes his master and dominates him to the extent that he no longer looks for challenging work and involved experiences. Management, therefore, has its belief confirmed that employes are lazy and do not want responsibility.

Research into human behavior has not progressed far enough to outline specifically new organizational structures and methods of management control to overcome this problem. But, Dr. Argyris says the deepest and most lasting cohesiveness in the organization is based upon human relationships that permit and encourage each individual to strive to realize his full potential. Cohesiveness is based more on shared responsibilities than on the compulsion to like and be liked.

NINE out of every 10 executives in American business today have some diagnosable health defect. As this percentage probably holds true, world-wide, if you undergo a physical examination today the chances are startlingly slim that you'll get a clean bill of health.

Dr. Charles E. Thompson in a new book, "What An Executive Should Know About His Health," (Darnell, $4.95) says the average man is not aware that he has anything wrong with his health. More than 55% of thousands of men examined at a Chicago health clinic said before the exam that they had no illness.

An equally interesting fact is that 37% of the executives examined were found to be needlessly worrying about a health condition they didn't have. They were secretly frightened about chest pains or heart flutter. They "knew" these were signs of heart trouble, but in actuality, their hearts were entirely sound.

The statistics Dr. Thompson uses as a basis of his book are said by the American Medical Association to be "one of the most exhaustive surveys of executive health ever completed."

Executive health is increasingly recognized as a major financial problem, not only to the individual, but also to his corporation. The fact is that illness or death of a high level executive can, and does, cost a company hundreds of thousands of dollars in management breakdown.

As one illustration of how costly an executive's unexpected death can be to a company, consider that case of Mr. A—who collapsed and died at his desk one month after he had been elected president at $50,000 a year under a five-year contract providing for payment of a substantial sum to his family in the event of his death. The company had to fulfill the contractual agreement for monthly payments to the executive's family. It had to go through a prolonged, expensive process of hiring and grooming a new president. During the period, its sales and profits dropped.

This and other typical examples explain why the trend is accelerating in industry toward regular health examinations for executives.

A survey of recent new demands by labor unions in the U. S. shows that the following are the most sought employe benefits:

1. Job security
2. Job transfers
3. Severance pay
4. Spreading the work

Unions are pushing for a program of unemployment benefits to provide laid-off workers with at least a year's partial pay during jobless periods.

Priority for employment in a new plant when an old one is closed, and work is switched to the new plant in a new location, is getting top attention.

A separation allowance equal to one week's pay for each year of service for employes who have at least two years of service, and are laid off for as long as a year, is another strong demand.

Unions continue to push toward a 30 or 35-hour work week, but are not specifically demanding it today. It is another means of spreading the work. In the meantime, employes with shorter work weeks are "moonlighting"—or taking second jobs.

SUGAR ABSTRACTS

Professor Mario A. Mascaró, Editor

Published under the Auspices of the International Society of Sugar Cane Technologists by Special Arrangement

Field

Salt for Sugar Beet?

J. C. HOLMES, *B.Sc., M.S., Edinburgh School of Agriculture, British Sugar Beet Review, Vol. 29, No. 4, pp. 163-164, (1961)*

There can be no doubt that common salt increases the yield of sugar beet; the large series of manuring trials carried out in the United Kingdom from 1940 to 1949 showed this clearly. It is also clear that salt performs at least in part the same function as potash, since the increase in yield from salt is considerably reduced when potash is applied.

Twelve experiments were conducted in Scotland; the data suggested that salt was less effective there than in the United Kingdom. A further series of experiments were conducted during 1951 to 1957 with the results given in two tables.

In a comparison of the effects of salt and those of potash there is no doubt that for the beet crop, salt is more effective, and cheaper. A case can therefore be made for using salt instead of potash. However, beet does take up potash from the soil even when salt is applied, so that to withhold potash might be detrimental to other crops in the rotation which cannot substitute salt for potash.

The conclusions to be drawn from this series of experiments are fairly clear:

1) It is highly profitable to use salt on sugar beet in addition to potash on soils which are low or tending to be low in available potash.

2) In soils high in available potash, the return for using salt in addition to potash is unlikely to be profitable.

3) More experiments are required to determine (a) The effects of other levels of salt, and (b) possible differences in response to salt which might occur between the ridge (which concentrates fertilizers) and the flat.

■

Irrigation Trials with Sugar Beets

G. RIVOIRA, *Stud Sassar. 7, Sez. 3, pp. 199-231, Univ. Sassari.*

Sprinkling irrigation and flood irrigation at 2795 cubic meters per hectare; at 5760 cu m/he in three applications and at 2700 cu m/he in three or six applications were compared in two seasons. Sprinkling irrigation (especially when given in six equal applications) resulted in a better utilization of water and increased root yields by 9.97 tons/hectare, (or 1.41 tons sugar).

■

Results of Experiments on the Technological Value of the Sugar Beet

ING. DR. MIROSLAVA DRACHOVSKA, *Zucker, No. 8, pp. 182-187, (1961).*

In the Research Institute of the sugar industry in Prague experiments were carried out on the technological value of the sugar beet. As a result of this investigation several relations were found between some characteristics of the sugar beet, which may be determined easily, and the expected white sugar yield. Formulae are given. The so-called M-W factor, which means the amount of molasses per 100 kg white sugar, is especially significant. Furthermore, a connection was found between storage time and sugar losses in the stored beet. The concept of the "optimal" beet cannot be unequivocally defined by stating the chemical and biological properties, as a large number of additional influences have to be considered in this respect. Examples are mentioned.

■

Factory

Replacement of Sulphuric Acid with Bagasse Ash in Ethanol Fermentation

A. A. MUJEEB *and* S. VASUDEVAN, *Sharkara, Vol. 3, No. 2, pp. 76-82 (1960)*

The prevailing practice for avoiding bacterial contamination in alcohol distilleries is the adjustment of pH to an optimum level of 4.8-5.2. While yeast grows well at this pH many bacteria do not grow at this acidity. The adjustment of pH is done usually by sulphuric acid. Batenga, of the Philippines, has employed bagasse ash for the same purpose. While the results of fermentation with ash were better than with acid, Batenga has not given experimental data or offered explanation regarding the mechanism of the action taking place with the ash.

The present work relates to the use of bagasse ash in place of sulphuric acid in ethanol fermentation on the following aspects: (a) The determination of the optimum quantity of bagasse ash to be used in fermentation; (b) The mechanism of the action of bagasse ash in the fermentation medium; (c) Behavior of bagasse ash in place of sulphuric acid in large scale fermentation. Three experiments were made with results tabulated in nine tables.

Summary: 1) The use of bagasse ash in place of sulphuric acid in ethanol fermentation from cane waste-molasses has been studied on laboratory as well as commercial scale; 2) The bagasse ash in the fermentation medium; (c) Behaviour of its use is more economical; 3) It has been established that it is only the insoluble portion of the ash which is effective and improves fermentation by removing the undesirable organisms from the field of action by sedimentation, the action being physical rather than chemical.

■

Application of Ionic Exchange Process for the Clarification of Cane Juice

D. V. RAMANA RAO & C. J. DASA RAO, *Andhra University, Waltair, India, Indian Sugar, X, No. 11, pp. 699-701, (1961)*

Ion exchange has reached commercial stature in the beet sugar industry and in the refining of cane sugars and syrups. Although the pilot plant operation has been successful in several areas in the treatment of cane juice, no commercial installations have been set up.

Natural sugar solutions like cane juice, contain such a wide

variety of constituents that the reactions occurring during ion exchange treatment and the equilibria attained are exceedingly complex. In general, the sugars and other non-ionic substances remain unchanged, while the ionic substances are more or less completely removed. In addition, compounds in a relatively large molecular weight range may be removed by absorption, a phenomenon distinct from ion exchange. As many of these compounds are dark in color, ion exchange treatment results in a high degree of color removal. The treated juice consists of sucrose, glucose, fructose and other sugars; and the non-ionic organic non-sugars, including pentosans and gums. The removal of the ionic and absorbed material results in an increase in purity which averages about 6.5 points for clarified juice. The increase in purity makes possible increase in recovery of sugar which may be expected to average close to five percent; and corresponding reduction in quantity of molasses will occur.

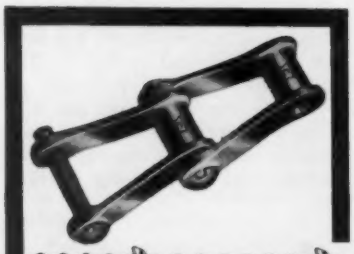
The paper describes operational procedure: thoroughput; sweetening-off; back wash; regeneration: cation, anion; rinse; sweetening-on.

The economics of this process depend upon a great many factors. The principal cost of ion exchange is for chemicals used in regeneration. This cost in general is proportional to sugar tonnage and independent of plant size. The cost of deionisation per ton of cane sugar in India is: Rs.47.25, roughly estimated (about 8 dollars); but including cost of chemicals, depreciation on exchangers, depreciation on plant, heat losses, water, power, labor and supervision. Against this cost must be balanced the returns, principally as follows: 1) Increased recovery of sugar; 2) Higher quality of sugar; 3) Residual syrup rather than final molasses; 4) Elimination of evaporator scale; 5) Reduction in boiling house load; 6) Recovery of by-products. [Editor's Note:—Under the exchange of six India rupees per dollar, above mentioned cost of deionisation is equivalent to four tenths of one U. S. cent per pound of sugar.]

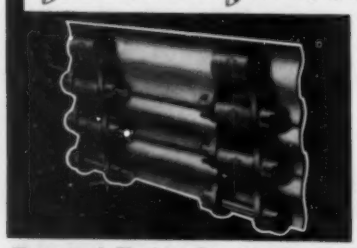
Equipment Specialists for Sugar Mills

KING of LEEDS

'Climax' malleable iron has greater comparative resistance to sugar acid corrosive, whilst our special 'Klimal' metal combines this important feature with longer wearing and higher anti-shock qualities.



Chains for Juice Strainers, Cane Feeding Tables, etc., etc.



CARRIER SLATS— *Standard sizes and shapes available for all sugar carrier chains. Close working faces prevent material jamming between slats.*

JOHN KING & CO. (LEEDS) LTD.
GARNET ROAD · LEEDS 11
ENGLAND

We can supply Elevators · Conveyors · Hoppers · Bunkers and Buckets of all types

Books

Technical Conversion Factors for Agricultural Commodities

FAO of the United Nations, Viale delle Terme Caracalla, Rome, 1960, 346 pages, printed in Italy, Sales Agents for FAO publ. in 34 countries.

This handbook is intended primarily for those concerned with statistics in agriculture but the information contained therein will be useful to general users as well. Units of measurement for 343 countries are included, expanding the information on conversion factors for capacity measures, technical coefficients and conversion factors indispensable to statisticians, economists and agronomists. The list of export agricultural products include sugar, as well as cereals, fruits, vegetables, roots and tubers, grapes and wine, coffee, tobacco, oilseeds, cotton, meat, milk, eggs, wool, silk, &.

■

Puerto Rican Abstracts

(*Continued from page* 36)

which, within the next two years, is intended to effect marked increases in tons of cane and sugar per acre, and at the same time make possible more economical use of fertilizer.

A discussion of the sampling techniques employed, and the manner in which foliar analytical data is interpreted and put to work under our program constitute the text of this paper.

There are approximately 10,000 acres being sampled regularly under our Crop Log system, which are represented by over 855 monthly samples.

A schedule has been established which provides an interval of exactly four weeks between samplings at each of our sites, and enables us to check the nutrient and moisture status of each field on 12 evenly spaced dates during the course of a year. The sampling technique is described in detail.

Upon completion of laboratory examination of the samples the analytical data for nitrogen, phosphorous, potassium, and total sugars are forwarded to the Crop Log office and, together with the moisture percent determinations run on the sheath material when each sample first arrived from the field, are compared with their respective critical indices for signs of deficiencies in the areas sampled. When these are indicated, they are immediately called to the attention of the Cultivation Department, and a meeting called between Research and Cultivation personnel to discuss the measures necessary to correct them.

Crop Log has been found most useful in its capacity to reveal interim nutrient and moisture deficiencies in the growing crop, and as a guide to irrigation control and ripening.

At two and three months for short and long growth cultvos respectively, the cane to be cut during the coming crop is put on a ripening schedule. The ripening process consists of lengthening the intervals between irrigations and discontinuing further fertilizer application in order to interrupt growth without adversely affecting cane quality, and effect a build-up of sucrose during those last crucial months, all of this with the objective of raising the potential mill rendement. Ripening can only be effective if the nutrient and moisture needs have been met during growth, and is of little value on unhealthy cane. The "Ripening Log" is the graphic form employed to observe the progress every logged field is making during its ripening period.

If the nutrient and moisture needs of the crop during growth have been adequately met, and this followed by a well-controlled ripening schedule, TCA and TSA yields should show an increase over yields obtained in the same fields before Crop Log was used. We hope to see some positive results of our work in the harvest data for the 1962 crop.

SIT Asks Award Nominations

Sugar Industry Technicians, Inc., inaugurated an honorary award program last spring by presenting two awards for achievement in sugar technology at their annual banquet. Plans are now underway to continue the recognition of worthy individuals on an annual basis. Recently the members of SIT were requested to submit written nominations of individuals so that these might be considered by the Honorary Awards Committee which will meet in February 1962. The deadline for receipt of nominations is February 1, 1962. The object of the award is to recognize one or two individuals each year who have contributed notably to the technological advancement of the sugar refining industry. The persons receiving the award do not have to be members of this society; however, nominations are made only by the membership of SIT.

Renowned Sugar Pathologist Retires

J. P. Martin, principal pathologist at the Hawaiian Sugar Planters' Ass'n. Experiment Station, retired recently after 37 years of scientific endeavour for Hawaii's sugar industry.

He joined the HSPA Experiment Station in 1924 and became head of the pathology department in 1929. Californian-born, he received his bachelor's degree from the University of California and his master's from the University of Hawaii.

A former president of the Hawaiian Botanical Society and the Pacific Orchid Society, Mr. Martin is the author of "Sugar Cane Diseases in Hawaii," and editor of the just published "Sugar Cane Diseases of the World," (volume one, of a two volume work). He is one of the original founders of the International Society of Sugar Cane Technologists, (ISSCT).

New SuCrest Directors

At the annual meeting of shareholders of American Molasses Company held on October 18th the following Directors were elected for the ensuing year: Jervis J. Babb, Adolf A. Berle, Frank M. Chapman, Morton L. Deitch, Abe Fortas, Harold F. Saufley, Robert Simons, Ellis Slatoff, Frank C. Staples, Felix Taussig and Richard M. Taussig.

Frank C. Staples, President of American Molasses Company, announced the election of the following officers, effective immediately: Adolf A. Berle, Chairman of the Board; Harold F. Saufley, Senior Vice-President; Ellis Slatoff, Senior Vice-President; Charles B. Broeg, Vice-President, Technical Director; Irving L. Cook, Vice-President, Director of Sales, Sucrest Sugar Division; Andrew deBalogh, Vice-President, Specialty Products; Manfred Landers, Vice-President, Technical Services; José M. López-Oña, Vice-President, Brooklyn Operations; John G. Schuettinger, Vice-President, Engineering; Fred Bruder, Assistant Vice-President.

The shareholders also approved a resolution to change the name of American Molasses Company to SuCrest Corporation.

Experiment Station Proposed for Brazil

Sugar Mill Owners Association of Pernambuco, Brazil, invited Dr. Pieter Honig to inspect their plantations accompanied by Brazilian technologists of the Experimental Station at Curado, the Northern Agricultural Institute and Commission Against Cane Pests. Dr. Honig believes that Pernambuco must select cane varieties to fit local conditions of topography, physical structure of soils, water availability and fertility. Without proper selection of varieties yields vary widely. "*Brazil Acucareiro*" says that it is highly desirable to establish a new special experiment station for the development of suitable varieties. The work of such an experiment station should be carried on in collaboration with other scientific centers.

Joseph F. Abbott Dies

Joseph F. Abbott, who served as president of American Sugar Refining Company from 1929 to 1953, died at his home in Greenwich, Connecticut on November 9th. Mr. Abbott graduated from Georgetown University Law School in 1912, served in field artillery during World War I and joined American Sugar in 1919. Following his distinguished service as president of the company, Mr. Abbott became chairman of the board in 1953 and retired in 1957. He had taken a leading part in the organization of the Sugar Research Foundation, was a cofounder and trustee of the Nutrition Foundation and served as director of numerous other companies. Mr. Abbott is survived by his wife, Mrs. Laura C. Griswold Abbott, two sons, Charles Griswold and Joseph Alan Abbott and a brother, Timothy Charles Abbott.

"What Every Refined Sugar Buyer Should Know"

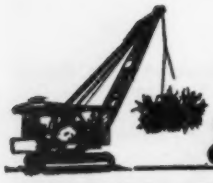
An extremely valuable booklet containing information of importance to sugar men generally as well as to buyers of refined sugar has been published by B. W. Dyer & Company, Sugar Economists & Brokers of New York. Bound as a loose leaf edition in hard covers, the book includes a glossary of sugar terms in which over 260 terms are defined and explained. Explanations range from "Administration Cane," "The British Commonwealth Sugar Agreement," "Ion Exchange" "Stopping A Notice" to "Viscosity." Definitions of 37 grades of sugar are included. Extensive tables on sugar statistics are reproduced together with maps of all the U. S. Delivered Price Zones and flow charts of typical beet factory, cane factory and refinery. In a foreword, B. W. Dyer & Co. say: "While we have tried to make the glossary workably complete . . . it would be little short of a miracle . . . if we had succeeded in covering all sugar terms in general use today or in explaining them to everyone's satisfaction. Therefore your suggestions, corrections or proposed additions are welcome." Revised pages for the loose leaf book will be issued from time to time.

Molasses In Compound Cattle Feed

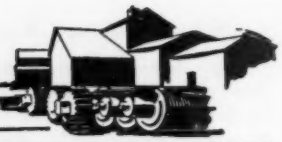
A vertical mixer for use in the preparation of cattle feed containing molasses is described in a booklet entitled: "Molasses In Compound Feed For Cattle, Swine & Poultry," prepared by Schuurmans & Van Ginneken of Amsterdam. Using cold molasses the mixer accurately proportions this material with other feed substances turning out a dry feed containing no lumps. Operation is largely automatic and may prove useful in promoting greater use of molasses for animal feed.

Increased Production At Central Dessalines

Through purchase of the shares of Compagnie Sucriere Cubano-Haitienne by the Government of Haiti through the Banque de l'Etat Haitien and the installation of new management of the mill in 1958, substantial increases in sugar production have been achieved. In 1958 the government acted to protect the independent cane growers who supplied Central Dessalines at Les Cayes in Haiti. The mill was originally designed to grind 1,000 tons of cane per day but this figure was never reached. Under the management supplied by the Haytian Institute for Agriculture and Industrial Credit, production for the year 1958 was increased to 8,150 short tons from 3,250 tons in the previous year. By 1959 production reached an annual figure of 10,450 tons and in 1960, 13,750 tons. New investment is planned for a further expansion of milling facilities stimulated by the opportunity to sell increased quantities to the United States.



Equipment & Service Market



SUGAR GRANULATORS

5 LINK BELT ROTO LOUVRE
3'10"x16'; 6'4"x24'; 7'5"x24'
FROM 5 TO 25 Tons per HOUR

10—40" & 48" Centrifugals
8—Vallez & Sweetland Filters up to 720 sq. ft.
4—30"x60", 26"x48" Corliss Engines

BOILERS, TURBOS, PUMPS, MILLS AND COMPLETE SUGAR FACTORIES

YOUR INQUIRIES SOLICITED

BRILL EQUIPMENT COMPANY

35-39 Jabez St., Newark 5, N. J.
Cable: BRISTEN

BOILERS

TURBO-GENERATORS · DIESELS
PUMPS · FANS · BURNERS · HEATERS

Large Selection . . . New and Used

EXPERIENCED ENGINEERS TO ASSIST YOU

WABASH POWER · EXPORT ·

WABASH POWER EQUIPMENT CO.

Phone: IN. 3-0303
3300 W. Peterson Ave.
Chicago 45, Ill.

E. C. MASSON

Member A.S.M.E.
Consulting Engineer — Sugar Technologist

SUGAR MILLS & REFINERIES

Engineering: Factory Expansion & Factory Automation.

Consultant: Manufacturing & Operating Techniques.

Cable: NOSSAM Telephone: Highland 3-3025
P. O. Box 45-484, Miami 45, Florida, U.S.A.

DIAMANTE 72.

El Aparato Evaporador Rinde Su Maxima Eficiencia Cuando Se Limpia Con el D-72. Solo Dos Horas de Tratamiento Pondra Fin a las Incrustaciones por Rebeldes que Estas Sean. Solicitamos Representantes.

Elaborado Ahora por la General Chemical Division Para Productos Morin.

PRODUCTOS MORIN

934-16th St. Miami Beach. Fla.
Phone: JE 2-3783

CANE FIELD EQUIPMENT

Harvester-Loader Combines.
Harvesters
Loaders
Cane Carts & Trailers
Field Derricks & Hoists.
Stubble Shavers
Cane Disease Treating Equipment.

Logan Perkins Ltd.
Sugar Machinery
International Trade Mart
New Orleans, U.S.A.

MIGUEL CHINCHILLA VARONA

MEMBER ASME
CONSULTING ENGINEER
IMPROVEMENTS OF EXISTING AND DESIGNS OF NEW SUGAR FACTORIES

1195 Bay Drive
Miami Beach 41, Fla.
Tel.—UN-6-3810

LIQUIDATING SURPLUS EQUIPMENT

Sweetland #12 filters with 72 stainless steel leaves. Western States type 316 SS 40" Centrifuges complete w/40 HP motors. Built 1953 at cost of $18,000.00. Cleaver-Brooks 500 H.P. package steam generator, ASME constructed, 200# W.P. Will sacrifice. Details upon request.

R. GELB & SONS, INC.

US22, UNION, N. J. MUrdock 6-4900

DIESEL LOCOMOTIVES & CORLISS ENGINE

9 GE & GM 20, 25, 44, 65, 80 & 100 ton
12—1000, 1500 & 3000 HP Frt Locos.
9—24 in., 30 in., 36 in., 42 in., ga. Locomotives
26 x 42 Hamilton Corliss Engine
25 ton American Diesel Loco Crane 60' Boom

R. C. STANHOPE, INC.
60 E. 42nd St., New York 17, N. Y.

SUGAR FACTORIES—CENTRALS

FOR SALE—COMPLETE—EXCELLENT CONDITION
Dismantling—shipment—erection arranged—operating

TONS IN 24 HRS. A DAY CAPACITY.

1—1200 Ton Central 1—2000 Ton Central
1—1600 Ton Central 1—3500 Ton Central
Details, information furnished complete.

Contact SOUTHERN CROSS ENGINEERING & FOUNDRY WORKS, BOX 910—Ponce, Puerto Rico
Telephone: 2-1380 Ponce, Cable SUDCROSS, Ponce, P. R.

BOILERS CALDERAS

de Vapor de Alta Presion
Turbogeneradores, etc.
NUEVOS y USADOS

Se envia el catalogo o solicitud

INDECK POWER EQPT. CO.

9750 Skokie Blvd., Chicago, Skokie, Illinois
OR 3-7666

FOR SALE

Hersey 5' x 26' Rotary Dryer. Iron Filter Presses to 36" square. Rotary Filters. Vacuum Pans. Evaporators, Centrifugals, Pulverizers, Rotary Dryers, Boilers, etc. Send for listing.

STEIN EQUIPMENT COMPANY

107—8th Street, Brooklyn 15, N. Y., ST 8-1944

ROY J. LEFFINGWELL

Public Relations Consultant, specializing in the sugar industry

Personnel services for sugar companies. Merchandise services for manufacturers.

116 South King Street Honolulu, Hawaii

COMPRESORES—BOMBAS AL VACIO
1902 AMERICAN 1961
Lo Mejor en Reconstrucciones

134 CFM Vac. 6½—6½ x 4 Worth.
137 CFM 100 PSI 7 x 7 Ingersoll ES-1
184 CFM 135 PSI 8 x 9 Ing. ES
234 CFM 100 PSI 9 x 9 Ing. Worth. Chic.
250 CFM Vacuum 12 x 6 Ing. Rand
321 CFM 125 PSI 10 x 11 IR-ES-1
354 CFM Vac. 14 x 5 Ing.
368 CFM PSI 12 x 10 Ing. ERI
496 CFM Vacuum 14 x 7 Worth & Chicago
465 CFM 100 PSI 12 x 11 Ing. & Chicago
528 CFM 100 PSI 14 x 12 Ingersoll ER-1
686 CFM 100 PSI 14 x 13 Worth. HB & Ing
823 CFM Vacuum 18 x 7 Ing. ES-1
1080 CFM Vac. 22 x 8 Ing. ER
1100 CFM Vacuum 17 x 7 Joy WGV-9
1292 CFM Vacuum 22 x 9 Ing. Rand—Ch. Pn
1720 CFM Vac. 24 x 11 Worth. HB
1882 CFM Vac. 28 x 10 Penn. 3A
2018 CFM Vac. 26 x 11 Worth. HB
1670 CFM Actual 100 PSI, Fuller C300-300H 300HP Syn 3-60-440
3135 CFM Vacuum 31 x 13 Ing. ES—Worth.
3780 CFM Vac. 26 x 12 CP. ODE (3)

American Air Compressor Corp.

48th & "S" Streets, North Bergen, New Jersey, E.U.A

TURBO-GENERATORS

1—1000 KW Allis-Chalmers—200 PSIG, 2300 Volts
1— 750 KW Allis-Chalmers—200 PSIG, 480 Volts
1— 500 KW Allis-Chalmers—200 PSIG, 480 Volts
1— 500 KW General Electric—125 PSIG, 480 Volts
1— 350 KW General Electric—140 PSIG, 2300 Volts

Many others available—Send for information

CHARLES WEAVER, INC.

Phone:
BRoadway 3-1900

19701 James Couzens Hwy.
Detroit 35, Michigan

POSITION WANTED

PURCHASING AGENT—more than 25 years experience, thorough knowledge of all phases of the Sugar industry. Will also consider Purchasing for individual sugar factories as New York resident buyer. Write, Box # 837, Sugar y Azucar, 25 West 45th St., New York 36, N. Y.

POSITION WANTED

Position wanted in Administration or Factory by British Subject. Qualified Sugar Chemist (A.I.C.T.A.) with 18 years experience in Raw Sugar and Rum Manufacture including 9 years Management. Write Box 835, Sugar y Azucar, 25 West 45th Street, New York 36, N. Y.

POSITION WANTED

Field Superintendent—more than 20 years on extensive mill-owned cane operations in Latin America. Supervised operation 100 tractors. Managed 17,000 acres cane. American. Fluent Spanish; correspondence both languages. Please write Sugar y Azucar, Box #836, 25 W. 45th St., New York 36, N. Y.

Facts About Sugar

(*Continued from page* 52)

Due to lack of storage space in the old boiler room, bagasse was burned under forced draft conditions to get rid of the material. As a result, fuel was not used efficiently nor completely burned.

With the construction of a new 3,000 KW General Electric turbo-generator in the factory power house, and enlarged bagasse storage facilities, there is expected to be an improvement in the fly ash problem and a much more efficient generating system.

Brazil to Increase Production 9.2%

Rio de Janeiro, October 16, 1961: The Executive Commission of the Sugar Institute has approved plans for the 1961-62 season, which opened on June 1st. Mills are authorized to raise production of 'usina' sugar to 3,863,046 short tons, or 356,223 tons more than last season in view of the prospects of expanding local consumption and exports. Production is still considerably below the potential capacity of Brazil's 60,-915 registered mills, which crushed 40,732,-351 tons of cane in the civil year 1960, producing 3,650,591 tons of *usina* sugar.

The volume reserved for the domestic market in 1961-62 is fixed at 2,904,000 tons, 363,000 are set aside for the North American preferential market and 594,000 are reserved for free world markets. Exports are expected to yield about U. S. $75 million.

Sao Paulo's quota is fixed at 1,069,483 short tons in all. Pernambuco and Rio de Janeiro, the next biggest producers, have been allotted total quotas of 891,000 and 462,000 tons.

Domestic consumption, which is increasing steadily, should reach 2,904,000 short tons in 1961-62.

As regards the 1960-61 season, which ended on May 31st, the Sugar Institute had at first authorized a production quota of 3,359,400 tons, but subsequently raised the figure to 3,656,400 owing to domestic and foreign market conditions. According to the latest bulletin of the Sugar Institute, which summarizes the position in all Brazilian states, the situation at March 31st, with only two more months to go, was as follows:

Stocks on hand at June 1st, 1960		641,447
Production June/March, 1961		3,446,991
		4,088,438
Exports June/March, 1961	807,104	
Consumption do.	2,388,006	3,195,110
Stocks on hand at March 31st		893,328

The 1960-61 figures for production, exports and consumption all represent substantial increases over the corresponding figures of any recent year.

In 1960 Brazil exported 855,000 tons of sugar, valued at U. S. $65,000,000. Shipments varied considerably from month to month, but *demerara* type predominated throughout the year. Thus, during three months in the first half of the year exports totalled 189,259 tons of demerara, as against 14,772 t. of crystal. In September total shipments dropped to 19,167 t., but rose to 114,-259 in October and declined to 77,552 t. in December.

The Institute announces that the 1960-61 season ended on May 31st with production and absorption approximately balanced, owing to increased domestic consumption and exports.

The period for crushing opens officially on June 1st in South Brazil and on September 1st in the North. It closes on December 31st and March 31st, respectively, in South and North unless extended by the Institute.

In September the President of the Institute introduced new regulations affecting sales of sugar by the Institute to foreign markets. The services of stevedores will be contracted for with specialized firms, in public competition, for each shipment. In the case of bulk shipments used bags will be sold by public auction and paid for in cash. The first shipment to U.S.A. under the new regulations resulted in an economy of 5,-000,000 cruzeiros for the Institute. Stevedores' charges were reduced from 600 to 360 crs. per metric ton loaded. Between 80 and 90 steamers are expected to be loaded this season.

Japan is paying good prices for Brazilian sugar; 2,000 tons were shipped at 3.50 U. S. cents per lb. F.O.B. Brazil in May.

In the case of shipments to the North American market the Sugar Sales Commission publishes calls for tenders for each operation, quoting the volume to be exported, the type of sugar, net price per metric ton F.O.B., 'stowed,' port of shipment, etc. Offers must be delivered to the Department of Foreign Trade in sealed envelopes on a specified date.

In July offers were invited for bulk shipments of 70,000 tons of demerara to the North American market, 10,000 through Santos and the remainder through the ports of Recife or Maceio in North-east Brazil.

Shipments through Santos and Rio were subsequently suspended to the American market and exports confined to North Brazilian ports. The Institute explained that the American quota of 294,000 tons, then authorized, would be distributed among the four traditional exporting states, Sao Paulo and Rio to ship their quotas in July and August, Pernambuco and Alagoas shipping in September and October. The total allotted to Sao Paulo was 135,000 tons, leaving 159,-000 to be divided among the three other exporting states.

The annual dispute regarding the price to be paid for sugar by Brazilian consumers has been waging since July. Sugar is still selling at 918 crs. (say U. S. $3.23) per bag of 132 lbs., despite the increased onus imposed by recent exchange regulations and the ever-growing inflation. According to the Institute production costs have increased 43.4% since the last price adjustment, but at the time of writing the Federal Supply and Price Commission, which decide the price to be paid by consumers, had not yet agreed to a corresponding rise in sugar prices.

■

Cuban Resistance Leader Addresses Sugar Club

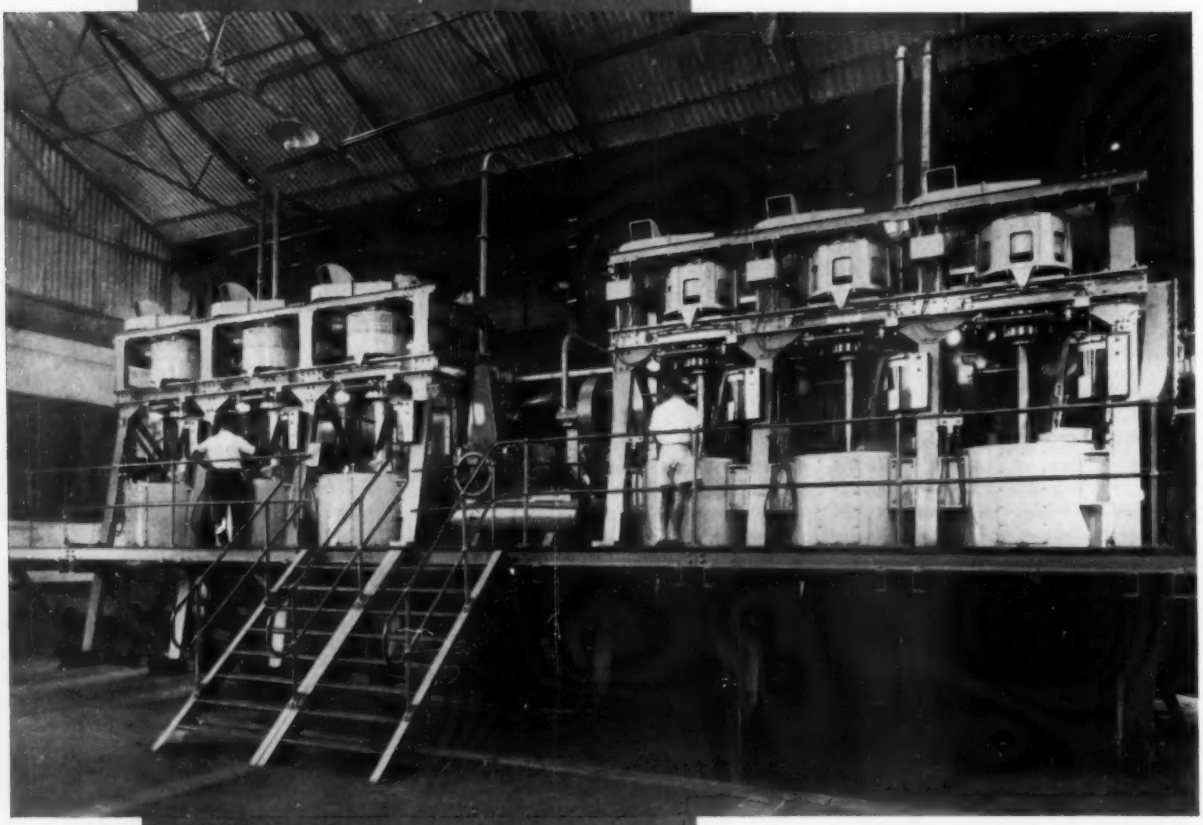
An account of underground activities against the Castro regime in Cuba by a participant who narrowly escaped execution featured the first luncheon meeting of the Sugar Club's 1961-62 season on October 26th at the Downtown Athletic Club in New York. The speaker was Antonio Navarro, a native Cuban who had been prominent in Cuban molasses, sugar and textile industries before confiscation of these businesses. Mr. Navarro has been appointed head of sugar sales for the W. R. Grace Company in Peru.

Ballou Named Spreckels Director

Fred H. Ballou has been elected to the Board of Directors of Spreckels Sugar Company filling the vacancy caused by the death of Roland C. Foerster. Mr. Ballou, a graduate of the University of Colorado, has been with the Spreckels Company since 1937 and has been active in the work of the American Society of Sugar Beet Technologists.

BROADBENT

Una instalación que incluye tres Centrífugas Broadbent de alta tarea, 48" x 1200 R.P.M. sincrónicas, para purgar masas cocidas 'A' y 'B'; y tres unidades Broadbent de 42" x 1500 R.P.M. sincrónicas, para purgar masas cocidas 'C', instaladas en el central "Highlands" de la Anglo-Ceylon & General Estates Co., Ltd. en Mauricio.



THOMAS BROADBENT & SONS LTD.

TALLERES CENTRALES — HUDDERSFIELD — INGLATERRA

TELEFONOS 5520-5 CABLEGRAMAS "BROADBENT" HUDDERSFIELD.

Mensaje Del Presidente A Los Tecnicos

Es una gran satisfacción extender a los socios de la Asociación de Técnicos la más cordial bienvenida a nuestra trigésimanovena Asamblea Anual que se celebrará los días 6, 7 y 8 del próximo mes de Diciembre en los salones del Hotel Caribe Hilton en San Juan.

Nuestra asamblea promete ser muy interesante y esperamos que el variado programa que se presentará merezca la aprobación y sea del agrado de todos los miembros de la Asociación.

Notarán, sin duda, que en el programa, además de conferencias sobre materias de interés local por técnicos puertorriqueños hemos incluido, gracias a la gentileza de nuestros amigos y relacionados en el exterior, conferencias y discusiones de mesa redonda sobre temas de gran importancia para nuestra industria en general no solamente en nuestro plano local sino también en nuestras relaciones exteriores.

Tanto nuestros compañeros conferenciantes como los distinguidos visitantes, que han prometido estar con nosotros, disertando sobre problemas comunes así como también sobre nuevos procesos técnicos, variedades y otros aspectos de nuestra industria crearán un marco propicio para la discusión de dichos problemas por nuestra matricula en general. Estas discusiones resultarán sin duda, beneficiosas para todos los que estamos relacionados directa ó indirecatamente con la industria y sobre cuyos hombros está la responsabilidad de mantener la misma en la posición de vanguardia que le corresponde en la economía de nuestra querida isla de Puerto Rico.

La zafra de este año, de acuerdo con información publicada por la Asociación de Productores de Azúcar, fué mucho más productiva que la anterior. Se molieron 10,754,017 toneladas de caña para un aumento sobre la zafra anterior de aproximadamente 750,000 toneladas de caña y se produjeron 1,095,751 toneladas de azúcar contra solo 1,006,385 toneladas en el año 1960. El rendimiento promedio de la isla fué de 10.089 comparado con 10.063% en 1960.

Este aumento en producción por el cual debemos sentirnos mas optimistas, sin desmayar en nuestros esfuerzos combinados por mayor y más eficiente producción, se debe a nuestro juicio a varios factores que han ayudado grandemente en nuestra lucha por llevar a nuestra industria, la primera de nuestro país, a una posición económica sólida para satisfacción y beneficio de el pueblo de Puerto Rico.

Entre estos factores beneficiosos tenemos que enumerar los siguientes:

El programa de incentivo, para nuevas siembras promulgado por nuestro Hon. Secretario de Agricultura, Sr. Luis Rivera Santos, que ha sido un gran éxito; las nuevas variedades desarrolladas por nuestra Estación Experimental entre las cuales podemos mencionar la P. R. 1013, P. R. 1016, P. R. 1048 y la P. R. 980, ya probadas con muy buenos resultados en muchas de nuestras zonas cañeras; el uso de yerbicidas como práctica general para combatir yerbajos eliminando competencias a la caña; fórmulas y métodos para aplicación de fertilizantes y además estudios en el campo para determinación de crecimiento y madurez en nuestras cañas antes del corte.

En la parte fabril también hemos tenido éxitos tales como los equipos para lavar caña; la alimentación continua y uniforme a través de conductores automatizados; uso de desinfectantes en el molino para reducir la inversión de azúcares y muchos otros.

Debemos además consignar nuestro agradecimiento al Hon. Luis Rivera Santos, Secretario de Agricultura; al Sr. Arturo Roque, Director Estación Experimental; al Dr. Bernardo Capó, Director Auxiliar Estación Experimental y otros funcionarios del gobierno que nos brindaron magnífica y decidida cooperación en la consecución de nuestro programa de variedades, que contempla la producción de 1,000,000 de semillas para el año 1965-66 y que fuera aprobado por nuestra Asamblea Anual próximo pasada.

Es motivo de legítimo orgullo el informarles que este programa ya es un hecho con esfuerzos unidos de la industria y el Gobierno, y gracias a nuestros compañeros Sr. Frank Beale, Presidente del Comité de Variedades, Sr. Rafael Martínez Giralt, Sr. Antonio Roig Jr., Sr. Orlando de Aragón, Sr. Jesús M. Guzmán y el Sr. Robert Goodwin a quienes felicitamos de todo corazón y exhortamos a seguir trabajando con el mismo entusiasmo y dedicación por el bienestar de nuestra querida Asociación para beneficio general de nuestra industria.

Este año ha traído grandes cambios a nuestro cuadro industrial, ya que lo que se informara como rumor en la edición especial de *Sugar & Azúcar* el año pasado, ó sea la posible compra de las propiedades de Fajardo-Eastern Sugar Ass. por C. Brewer Puerto Rico, Inc. es ya un hecho, y queremos dar la más cordial bienvenida a este nuevo miembro de nuestra familia cañera e industrial.

Otro paso de importancia este año y que demuestra la confianza que hemos desarrollado en nosotros mismos es el reciente contrato entre le Autoridad de Tierras de Puerto Rico y Central Aguirre Sugar Company para que la última supla a la anterior consejeros técnicos en la operación de una de sus centrales, la Central Plazuela. Exito les deseamos a ambas en este intercambio fraternal de tecnología que honra y da reconocimiento a miembros distinguidos de nuestra Asociación.

Queremos enfatizar el hecho de que a nuestra juicio una de las razones primordiales para la existencia de nuestra organización es el intercambio de tecnología con otras áreas productoras del mundo y así mismo localmente, que nos lleve a mejorar las operaciones fabriles y de campo e invitamos cordialmente a nuestros amigos y compañeros de la industria mundial a visitarnos y a compartir y departir con nosotros no solo en nuestras Asambleas Anuales sino a su conveniencia, en la seguridad del éxito y beneficios de este intercambio de proyecciones tecnológicas.

Exhortando a toda nuestra matrícula, por el bien de nuestra industria y nuestra Asociación a asistir a nuestra asamblea, cuyo éxito confiamos al Todopoderoso, y en la seguridad de que podemos contar con vuestra más decidida cooperación les reiteramos nuestra cordial BIENVENIDA. LES ESPERAMOS.

C. Haeussler,

Presidente

PROGRAMA DE

Asociacion de Tecnicos

CARIBE-HILTON

MIÉRCOLES, DICIEMBRE 6

9:00 A.M. — INSCRIPCIÓN Y SERVICIO DE CAFÉ

9:30 A.M. — DISCURSO DE BIENVENIDA
por Miguel A. Hernández Agosto

10:15 A.M. — LOS PRODUCTOS QUÍMICOS EN LA AGRICULTURA
por Dr. A. E. Carlson

10:45 A.M. — POSIBILIDADES PARA UNA REFINERÍA EN EL AREA DE NEWPORT
por C. M. Nicholson y E. Holm

11:15 A.M. — POSIBILIDADES SOBRE EL EMPLEO DE LA ENERGÍA NUCLEAR EN LA INDUSTRIA AZUCARERA
por Julio Hernández Fragoso

12:00 N. — COMENTARIOS SOBRE LA CONVENCIÓN DE LOS TÉCNICOS AZUCAREROS DEL PERÚ, CON EXHIBICIÓN DE UNA PELÍCULA
por Adalberto Roig

1:00 P.M. — APERITIVOS Y ALMUERZO

JUEVES, DICIEMBRE 7

CAMPO

9:00 A.M. — INSCRIPCIÓN Y SERVICIO DE CAFÉ

9:30 A.M. — PROGRESO DEL CENTRAL AGUIRRE EN EL CAMPO
por personal del propio ingenio

10:30 A.M. — INVESTIGACIONES RECIENTES SOBRE EL CONTROL QUÍMICO DE LAS MALEZAS EN TRINIDAD
por Dr. A. J. Vlitos e Ian Lawrie

11:15 A.M. — EL FOMENTO DE LAS NUEVAS TIERRAS EN CAÑO TIBURONES
por Angel Iturbe

11:45 A.M. — PROGRESOS EN 1961—CUERPO TÉCNICO DE LA ESTACIÓN EXPERIMENTAL

12:15 P.M. — PELÍCULA—LOS COSECHADORES INVISIBLES

1:00 P.M. — APERITIVOS Y ALMUERZO

LA CONFERENCIA DE 1961

Azucareros de Puerto Rico

SAN JUAN

FABRICA

9:00 A.M. — INSCRIPCIÓN Y SERVICIO DE CAFÉ

9:30 A.M. — LAS CARACTERÍSTICAS DE VARIOS AUXILIARES FILTRANTES EN LA INDUSTRIA AZUCARERA
por Dr. P. W. Leppla

10:15 A.M. — DISCUSIÓN EN MESA REDONDA SOBRE LOS EFECTOS DEL MANEJO Y ALMACENAJE A GRANEL EN LAS CUALIDADES DE REFINACIÓN DE LOS AZÚCARES CRUDOS

11:30 A.M. — ALMACENAJE DE AZÚCARES BLANCOS EN SILOS EN EL CENTRAL MERCEDITA
por Manuel Cruz Vargas y J. E. Mayoral

12:15 P.M. — ANÁLISIS DE LUBRICANTES PARA AYUDAR A LAS OPERACIONES DEL CENTRAL AZUCARERO
por Robert Kincaid

1:00 P.M. — APERITIVOS Y ALMUERZO

VIERNES, DICIEMBRE 8

9:00 A.M. — SERVICIO DE CAFÉ

9:30 A.M. — PROGRESOS RECIENTES EN LA LEGISLACIÓN AZUCARERA
por Dudley Smith

10:15 A.M. — PLAN PARA MEJORAR LA INDUSTRIA AZUCARERA DE PUERTO RICO
por Arturo Riollano

10:45 A.M. — REPORTES DE LOS COMITÉS—
Variedades—Frank Beale
Toma de Muestras—H. A. Willett

11:30 A.M. — JUNTA GENERAL

1:00 P.M. — REUNIÓN SOCIAL Y COCTELES

SÁBADO, DICIEMBRE 9

DÍA PARA LOS VISITANTES—Manuel Mejía Valentín

9:00 A.M. — VIAJE A LA ESTACIÓN EXPERIMENTAL EN GURABO. CONTINUANDO DESPUES AL CENTRAL ROIG—YABUCOA

ALMUERZO EN—Las Chorras—Humacao

REGRESO A SAN JUAN

Plan Para Mejorar Nuestra Industria Azucarera

Por: Arturo Riollano*

Es de conocimiento general la situación desfavorable por la que ha venido atravesando durante los últimos años nuestra industria azucarera y muy en particular, su fase agrícola. La fabril, aunque ha tenido sus serios problemas, ha podido resolverlos con mayor éxito, pero también en la actualidad se ve amenazada por la merma notable sufrida en los rendimientos así como también por la reducción en la producción total de azúcar.

Cuando se desean implantar los métodos mejorados de producción es indispensable considerar, entre otros, los siguientes factores: el tamaño de la finca, la fertilidad del suelo, la topografía, el clima, las facilidades para riego y desague, el crédito o el capital disponible, así como los conocimientos y la habilidad administrativa de quien maneja la empresa agrícola. El tamaño de la finca en el cultivo de la caña constituye un factor de suma importancia, posiblemente decisivo, al considerar cualquier plan de mejoramiento que se desee introducir.

Por su naturaleza, el cultivo de la caña requiere que sea extensivo, necesitándose unidades o fincas grandes para permitir la explotación más eficiente. Las unidades pequeñas, según datos obtenidos del Servicio de Conservación y Estabilización Agrícola, no pueden subsistir como lo demuestra el hecho de que en un período de siete años, de 1954 a 1960, se eliminaron en Puerto Rico 3,651 fincas de caña con un área menor de cinco acres. En ese lapso de tiempo se eliminaron en total 4,546 fincas dejando activas en el cultivo de la caña 14,973 fincas, reduciéndose el área a cosecharse en 40,000 acres aproximadamente. Sin embargo, en ese mismo período hubo un aumento de cinco fincas con un área individual mayor de 500 acres. Es evidente la tendencia marcada hacia la eliminación de las fincas pequeñas y la consolidación y formación de unidades de mayor extensión con el objeto de mejorar el cultivo de la caña para convertirlo en una empresa más económica y eficiente.

De acuerdo a las estadísticas publicadas por el Servicio de Conservación y Estabilización Agrícola, las fincas más pequeñas han demostrado ser las menos eficientes y por consiguiente, han obtenido las producciones más bajas por unidad de área. Por el contrario, a medida que aumenta el tamaño de la finca, so nota el incremento consistente en la producción de azúcar por acre. Esto se debe principalmente a que las unidades más grandes están mejor equipadas y por tanto, han renovado sus siembras con más frecuencia y en mayor escala, han adoptado las prácticas mejoradas en los cultivos y han introducido con éxito muchas de las nuevas técnicas de producción.

Los numerosos trabajos de investigación técnica que se han llevado a cabo en otras áreas cañeras así como en la nuestra, han permitido acumular valiosa información la cual si pudiera adaptarse y aplicarse a nuestros sistemas de cultivo podría traer mejoras notables a la empresa agrícola. Algunas de estas nuevas técnicas han podido incorporarse en aquellas fincas de caña que son operadas como unidades de mayor extensión.

En vista de esta realidad, básicamente el plan para mejorar nuestra industria azucarera en su fase agrícola, consistiría en desarrollar un método administrativo para agrupar las fincas en unidades mayores y establecer regiones geográficas definidas con el propósito principal de ofrecer a los cosecheros de caña aquellos servicios centralizados que por gestión individual actualmente no pueden utilizar. Una vez determinadas las regiones geográficas que resultaren de esta agrupación de fincas, se procedería a estructurar el tipo de organización apropiado para ofrecer los servicios centralizados.

Algo parecido ya se ha hecho al lograr la consolidación de los servicios de transportación terrestre y marítima mediante el manejo del azúcar a granel. Las centrales han quedado agrupadas en regiones geográficas que facilitan los embarques de azúcar crudo por cuatro puertos terminales, a saber: Aguirre, Guánica, San Juan y Aguadilla. Con la centralización de los servicios de transportación y mercadeo se han reducido notablemente los costos de embarque y venta, beneficiándose los cosecheros y los elaboradores en una época en que los fletes marítimos han registrado un aumento considerable.

En forma algo similar podrían agruparse las regiones cañeras conjuntamente con las centrales azucareras con el objeto de ofrecer al productor de caña otro tipo de servicios centralizados que permitirían implantar las mejores técnicas de producción que se requieren en los cultivos. La regionalización de las zonas cañeras podría facilitar la formación de organizaciones o entidades provistas del personal técnico, administrativo y ejecutivo que necesita una empresa para operar en grandes proporciones y para cubrir áreas extensas. Además de ofrecer los servicios de administración de fincas y de consulta a los cosecheros de caña, la organización tendría la maquinaria agrícola apropiada para ejecutor las labores requeridas en la renovación regular de las siembras y la implantación de las mejores prácticas en los cultivos. La organización podría ofrecer también servicios esenciales a otros tipos de agricultura prevalecientes en la región. En la actualidad una gran proporción de los colonos de caña, debido a la limitación de la unidad agrícola que manejan, individualmente se ven imposibilitados de adquirir la maquinaria agrícola que es indispensable para el mejoramiento de los cultivos.

Este tipo de organización estaría en posición de hacer trabajos de experimentación en cooperación con las estaciones experimentales para los estudios de las variedades de caña, las plagas de insectos, las enfermedades, los sistemas de riego y desague, así como también para resolver determinados problemas en el campo de la ingeniería agrícola. Entre otros servicios a ofrecerse por la organización, podrían mencionarse los siguientes: nivelación y preparación de tierras, aplicación de yerbicidas y fertilizantes, combate de insectos, determinación de los abonos más apropiados, corte y cargado de la caña por medios mecanizados, transportación, reparación y mantenimiento de equipo, suministro de fertilizantes y otros productos químicos, propagación y distribución de semilla de caña de las variedades superiores. En determinados casos, la organización regional podría asumir la administración total de ciertas fincas cuando los dueños así lo solicitasen. También la organización podría servir de agente intermediario entre las instituciones de crédito y los colonos para conseguir el financiamiento adecuado de la empresa agrícola.

Como paso inicial para determinar la posibilidad del plan propuesto, se podrían utilizar dos áreas definidas en donde ya se han hecho gestiones por el gobierno y por la empresa privada para regionalizar la

(*Signe en la página* 99)

***Basado en un trabajo presentado por el autor ante la Reunión Anual de la Asociación de Técnicos Azucareros de Puerto Rico, celebrada en San Juan en Diciembre 6 al 9 de 1961.**

EXTRACTOS DE LOS TRABAJOS

presentados ante la Reunión Anual (1961) de la Asociación de Técnicos Azucareros de Puerto Rico

Programa sobre Variedades de la Estacion Experimental de Luce & Co., S. en C., Central Aguirre

PEDRO CINTROSA ZAYAS, *Asoc. Téc. Azuc. de P. R., Dic. 1961*

Por varios años la Estacion Experimental de Luce & Co. ha mantenido, en cooperación con la Esctacion Experimental Agrícola de Río Piedras, un contínuo programa sobre variedades para ayudar a mejorar tan importante fase de nuestra industria azucarera.

En distintas áreas de las tierras de Luce & Co. se han establecido experimentos comparativos sobre variedades así como lotes para su propagación.

Para demostrar que una vairedad de caña es superior a la que se cultiva en nuestra región, se han hecho numerosos experimentos comparativos bajo distintas condiciones de suelos y en distintas áreas.

Las nuevas variedades se ensayan sobre su produción total de azúcar por acre, rendimiento, resistencia a las enfermedades y otras características agronómicas tales como tipo de crecimiento. Actualmente se hace énfasis sobre las cañas del tipo de crecimiento erecto y otras cualidades que reducen los costos de producción particularmente durante el corte y cosecha. Se hace ésto durante el proceso de selección de nuevas variedades. Se explican los procedimientos experimentales y se tabulan los resultados sobre doce variedades.

■

Características del Comportamiento de los Auxiliares Filtrantes Diatomite & Perlite en la Industria Azucarera de Caña

G. G. HALVORSEN, M. B. HARRIS, D. MENDOZA, *Asoc. Téc. Azuc. de P. R., Diciembre 1961*

La tecnología de los auxiliares filtrantes ha hecho muchos progresos en los últimos años en la preparación de diatomita y tierra de infusorios, desarrollando al efecto diversos tipos y grados para ajustarse mejor a las necesidades de velocidad de flujo y claridad en la filtración industrial. Los auxiliares filtrantes diatomáceos han sido estandarizados y usados en la industria azucarera por muchos años y el comportamiento general de los distintos tipos y grados son conocidos por la industria.

El desarrollo de auxiliares filtrantes derivados de roca perlite por el Departmento Dicalite de la Great Lakes Carbon Corporation, ha permitido crear una clasificación de auxiliares filtrantes perlite similar a la escala de permeabilidad de los auxiliares filtrantes diatomáceos; pero mostrando características diferentes en su comportamiento sobre licores azucareros.

Estudios de filtración hechos en varios laboratorios de refinerías de Puerto Rico durante la última zafra indican que la selección apropiada de un auxiliar filtrante perlite ejercerá influencia sobre la economía de la filtración al producir más velocidad de flujo por libra de auxiliar filtrante bajo condiciones equivalentes de claridad en el licor, en comparación con los auxiliares filtrantes diatomáceos ordinarios.

■

Plan para Mejorar la Industria Azucarera de Puerto Rico

ARTURO RIOLLANO, *Asoc. Téc. Azuc. de P. R., Dic. 1961*

Se presentan datos demostrativos sosteniendo que las pequeñas unidades de fincas productoras de caña de azúcar en Puerto Rico, operan con muy baja eficiencia como empresas agrícolas debido a su reducido rendimiento por unidad de superficie cultivada. La tendencia general es hácia la eliminación de las pequeñas fincas y a la formación de unidades mayores para lograr operación más eficiente. Se presenta una proposición sugiriendo el agrupamiento de un gran número de pequeñas fincas dentro de regiones geográficas, con el fin de establecer las correspondientes organizaciones de servicios para ayudar a los cultivadores de caña de azúcar. Dichas organizaciones suministrarían la maquinaria y equipos agrícolas adecuados, a base de arrendamiento, para ejecutar las operaciones agrícolas mecanizadas en las regiones respectivas. Esto incluiria servicios centralizados para la aplicación de abonos, hierbicidas y pesticidas así como para la cosecha y transporte de la cosecha de caña a los centrales. La organización debe estar en condiciones para ofrecer servicios administrativos y consultivos a los cultivadores de caña. Este plan ayudaría a la renovación de las siembras de caña de azúcar, suministrando la semilla de las nuevas variedades mejoradas.

■

Algunos Aspectos de las Investigaciones en el Central Aguirre

ROGER BILLMAN, *Luce & Co., S. en C., Asociacion de Técnicos Azucareros de Puerto Rico, Dic. 1961*

La historia del Departamento de Investigaciones en Aguirre procede desde 1950. En 1952 se construyó nuestro actual laboratorio de dos plantas, dando las facilidades adecuadas para estudios que eventualmente pudieran ser útiles a la empresa. En la actualidad el departamento está integrado por dos secciones. La Seccion Industrial dirigida por un Jefe químico y un químico auxiliar. Se incrementa éste personal en tiempo muerto por el químico del Central Machete. La Sección Agrícola está integrada por cuatro agrónomos experimentados y a veces durante el verano por un estudiante adelantado de la Universidad de Mayaguez. Además, hay una organización de veinte personas incluyendo técnicos de laboratorio, ayudantes en el campo, capataz de muestras y obreros.

El programa general de trabajo puede resumirse en la forma siguiente, teniendo en cuenta que el departamento de investigaciones desarrolla tambien labor del tipo de control de calidad:

A. Los esfuerzos del personal agrícola están dirigidos hácia la mejora y ensayos sobre variedades; regadío y fertilización, ambos sobre la base de investigaciones y control; el avalúo de productos químicos y los mejores métodos para su empleo; y otros proyectos adicionales.

B. La labor del personal industrial está orientada hácia estudios en plantas piloto sobre permutación iónica, su desarrollo y aplicación en la industria azucarera. Además del trabajo de las plantas piloto, el personal del laboratorio lleva a cabo los análisis de rutina, incluyendo tejidos de la caña, suelos, azúcares, jugos y mieles.

El objetivo del Departamento de Investigaciones de la compañia es realizar investigaciones y mantener las "herramientas" usadas para el control de la calidad. La mayor parte del trabajo es sobre la caña de azúcar; pero en algunos casos se realiza tambien sobre otras cosechas alimenticias. Ambos, el cultivo y el proceso de la caña de azúcar están incorporados a nuestro programa.

Ensayos en el Campo con Desecantes Químicos

RAMÓN ORTIZ NOGUERAS, *Asociación de Téc. Azuc., Dic. 1961*

Se realizaron experimentos en el campo para comprobar los resultados obtenibles por diferentes desecantes químicos; debido al empleo de la cosecha mecánica y a la práctica de quemar la paja remanente sobre el campo despues del corte. Los mejores resultados se obtuvieron con 7.25% PCP aplicado tres días antes de quemar la caña para cosecharla. Se usó tambien el "Reglone," un hierbicida desecante. Desques de 72 horas resultaba una pronunciada desecación. El porcentaje de paja y basura entregada al ingenio fué normal. Hubo un entero menos en el Brix y en la lectura de sacarosa, en tanto que la paja que quedó sin quemar en el campo fué 50% menos en el lote tratado que en el lote testigo. No se observaron efectos adversos sobre los retoños subsiguientes. Se necesita realizar experimentos adicionales sobre desecación química.

■

Análisis por Emisiones Espectrográficas—Una Técnica Nueva para la Industria Azucarera

ROBERT L. KINCAID, *Analistas de Puerto Rico, Inc., San Juan, P. R., Asoc. Téc. Azuc. de P. R., Dic. 1961*

El cuchillo de doble-filo de los costos en continua alza contra precios del azúcar fijos ha penetrado profundamente dentro de las utilidades potenciales de la industria azucarera. En consecuencia, se necesitan nuevas técnicas para lograr mayores rendimientos así como mas elevada eficiencia de operación, segun la urgente demanda económica de la industria. La mecanización de tanto el campo como la planta industrial constituye a su vez un natural aunque desmedido crecimiento de tal demanda. Una nueva técnica vital para incrementar una mecanización eficiente está constituída por el análisis por emisiones espectrográficas de los lubricantes usados para evitar los fallos mecánicos positivamente destructivos.

Cuando una muestra del material es adecuadamente excitada por una chispa eléctrica, cada elemento que integra la muestra emite ciertas longitudes de onda de luz específicas y pronosticables. Los instrumentos de emisión espectrográfica descubren éstas longitudes de onda de luz correspondientes a los elementos o cuerpos de interés; y al medir su intensidad determinan el porciento de concentración de ese elemento en la muestra.

Los aceites lubricantes en los motores, máquinas, transmisiones, reductores de velocidad de los molinos, equipos impulsores, compresores, turbinas, &. no se cambian hasta que están contaminados, segun ensayos físicos realizados por el laboratorio. El lubricante circula a través de todas las partes en movimiento. La partes del equipo sufren desgaste y trazas de esas substancias del desgaste son arrastradas y retenidas por el aceite lubricante. La concentración de esas substancias o elementos, determinadas por el análisis espectrográfico, revela las condiciones y el desgaste de ésa unidad.

Una muestra del lubricante se toma periódicamente de cada unidad a base de período de tiempo o de millaje. Una porción de ésta muestra es excitada en un instrumento de emisión espectrográfica para medir la cantidad de trazas de elementos presentes. Estas trazas de elementos dan un medio positivo de identificación sobre las partes críticas del equipo que se están desgastando en cada unidad. El resto de la muestra se analiza despues sobre viscosidad, punto flash, precipitación, contenido ácido y otras propiedades físicas. Manteniendo un registro para cada unidad específica de equipo, se tiene un historial de las trazas o vestigios de elementos. Un aumento anormal en uno o mas de los elementos indica una condición anormal en la unidad o equipo y permite los medios para fijar horarios de mantenimiento. Por ejemplo, en un motor un incremento marcado en sílice indica un mal funcionamiento del filtro de aire; un aumento de plomo y cobre indican desgastes en los cojinetes; un aumento en aluminio y cromo indica desgastes del cilindro y los anillos de los pistones, &. Los datos obtenidos de tales análisis son valorizados manteniendo un gráfico sobre la concentración de cada uno de los elementos o trazas contra las horas de trabajo para cada unidad individualmente. Debe hacerse notar que el análisis por emisiones espectrográficas de los lubricantes usados no es una panacea para determinar o descubrir todos los problemas de operación. Por ejemplo, ésta técnica es de poco valor para descubrir fallos imminentes por fatiga; porque lo que revelan son desgaste anormal o condiciones de corrosión, las cuales no están directamente asociadas con los fallos por fatiga.

El valor intrínseco de éste tipo de análisis de lubricantes usados descansa en el hecho de que se logra indicar las cosas anormales en las unidades de equipos de la industria antes de que se presente el mal funcionamiento o el apuro crítico, señalando la necesidad de actuar a tiempo para corregirlas antes que ocurra el fallo.

Es obvio que ésta técnica ofrece más elevada eficiencia y economías en el trabajo de unidades mecánicas; poder preparar mejores planes sobre mantenimiento; mayor disponibilidad del equipo durante los períodos críticos de la zafra; supervisión más eficiente; y economías derivadas al subsanar desórdenes menores de funcionamiento, antes que originen daños serios y destructivos.

■

Maduración de la Caña por Acción Química

RAMÓN ORTIZ NOGUERAS, *Asoc. de Téc. Azuc. de P. R., Dic. 1961*

Los rendimientos de azúcar por acre son influenciados por importantes factores tales como el clima, suelo, variedad, edad y nutrición (fertilizantes, regadío y drenaje). Además de la influencia de las prácticas del cultivo, las condiciones climatológicas que prevalezcan durante el crecimiento y particularmente durante la temporada de la cosecha, pueden afectar tales rendimientos. La influencia más importante durante el período de la cosecha es la lluvia.

La primer prueba fué realizada en la zafra de 1958, usando fertilizante con 75% de ácido fosfórico o 45% de P2 05 en la proporción de un galón del ácido por acre con cinco galones de agua. Esta solución daba un pH de .8, el cual es muy ácido. Se observó la cutícula quemada. La referida aplicación equivale a unas 4.4 libras de P2 05 por acre.

El área experimental y el área testigo fueron analizadas dos días antes de la aplicación para determinar Nitrógeno, Fósforo, Potasio y Humedad; y posteriormente se tomaron muestras cada semana hasta el corte o cosecha.

Los resultados sobre muestras de caña quemada tomadas durante la molienda de los lotes en el ingenio, fueron los siguientes:

TABLA I

Promedio de Muestras de cuatro carros, cada una

	% Sacarosa	*Pureza*	*Rendimiento 96°*
Lote tratado	14.22	82.96	9.53
Lote testigo	12.81	80.20	8.42

Se consideraron los resultados inconclusos e indecisos, repitiendose las pruebas en 1959, cambiando la forma de la sal y usando:

1. Fosfato monoamónico: Aplicado al promedio de 15 lbs/acre ó 9 lbs. de P2 05 por acre
2. Fosfato monopotásico: Aplicado al promedio de 12 lbs/acre o 6.2 lbs. de P2 05 por acre

Ambos materiales fueron disueltos en seis galones de agua por acre y regados desde un aeroplano. Se cortaron los campos a intervalos de una a tres semanas desde la fecha de la atomización.

Durante la primer serie de pruebas se observó un aumento del rendimiento base 96° fluctuando desde 0.19 a 1.80, en comparación contra el lote testigo. Una segunda serie de experimentos se realizó; pero la información y datos están sin terminar.

Nuestra departamento se propone realizar mayor trabajo en éste sentido de la investigación y para la próxima zafra se pre-

(*Signe en la página* 94)

Puntos Fundamentales del Funcionamiento

Tacho al Vacío de Alta Velocidad

por Alfred L. Webre, M.E.*

Siguiendo la serie de artículos publicados por *Sugar y Azúcar* desde Agosto de 1961, Mr. Webre incorpora su experiencia al diseño a un tacho al vacío de alta velocidad verdaderamente eficiente. El departamento de tachos constituye el corazón del proceso y por tanto el autor, a través de los años, ha introducido cierto número de modificaciones, cada una cuidadosamente probada en el trabajo y cada una de éllas contribuyendo positivamente a mejorar el funcionamiento. Esta serie continuará en las próximas ediciones y al completarse representará una obra práctica de trabajo sobre los equipos de transmisión de calor usados por la industria azucarera.—Editor.

Los tachos perezosos son enemigos de un buen proceso de elaboración. Resultan difíciles de operar, destruyen productos valiosos y producen azúcar de inferior calidad. Hay muchos en uso, algunos de muy reciente construcción.

Despues de muchos años de investigaciones y experiencia, han sido identificados los puntos defectuosos, permitiendo llegar al diseño de un aparato sobresaliente denominado Tacho al Vacío de Alta Velocidad, sobre el cual tratamos en éste trabajo. Ha sido ampliamente probado en la práctica, dando excelente funcionamiento. Es fácil de controlar, rápido en su operación, no destruye nada y el azúcar que elabora es de muy buena calidad.

En el tacho al vacío de alta velocidad las escuadras o aletas soportes han sido eliminadas. En todos los casos el peso del tacho es sostenido por su cuerpo o casco, lo que se consigue directamente proveyendo una extensión hácia abajo de la parte cilíndrica del fondo, reforzada por un pesado ángulo de hierro soldado con fines de soporte o punto de apoyo. Mediante éste arreglo la posición del tacho sobre las vigas que lo soportan puede ajustarse a conveniencia, en lugar de tener que localizar las escuadras en su lugar exacto. Tiene además la ventaja adicional de dejar el espacio libre de toda obstrucción.

El volúmen del fondo se ha diseñado al mínimo, basado en la conveniencia de una operación satisfactoria, disminuyendo el tamaño de los piés de templas y evitando el estancamiento. Sin embargo se ha dejado suficiente espacio libre para la expansión de los tubos y no restringir el paso de la masa cocida, sin perjudicar la circulación; sobretodo si el tacho está equipado con Circulación Mecánica.

La forma es cónica, con un ángulo de 20 grados con respecto a la horizontal. Al borde exterior hay un anillo cilíndrico, de 8" a 10" de altura, conectando la calandria al fondo. La válvula de descarga, en el centro del fondo, es lo bastante amplia para descargar una templa completa en no más de cinco minutos; estando la válvula completamente abierta y sin impedimentos.

El corazón del tacho al vacío es su calandria y por tanto debe ser proyectada con meticuloso cuidado; porque su funcionamiento implica un difícil trabajo de transmisión de calor.

• Las condiciones en la parte de vapor de los tubos son muy similares a las existentes en un evaporador, por tanto el diseño ha sido tratado de la misma manera. El primer punto a considerar es evitar flujo desigual del vapor a través de la superficie calórica. Si no es así se formarán bolsas o zonas de gases incondensables, obstruccionando la transmisión del calor y resultando en un funcionamiento lento y no satisfactorio.

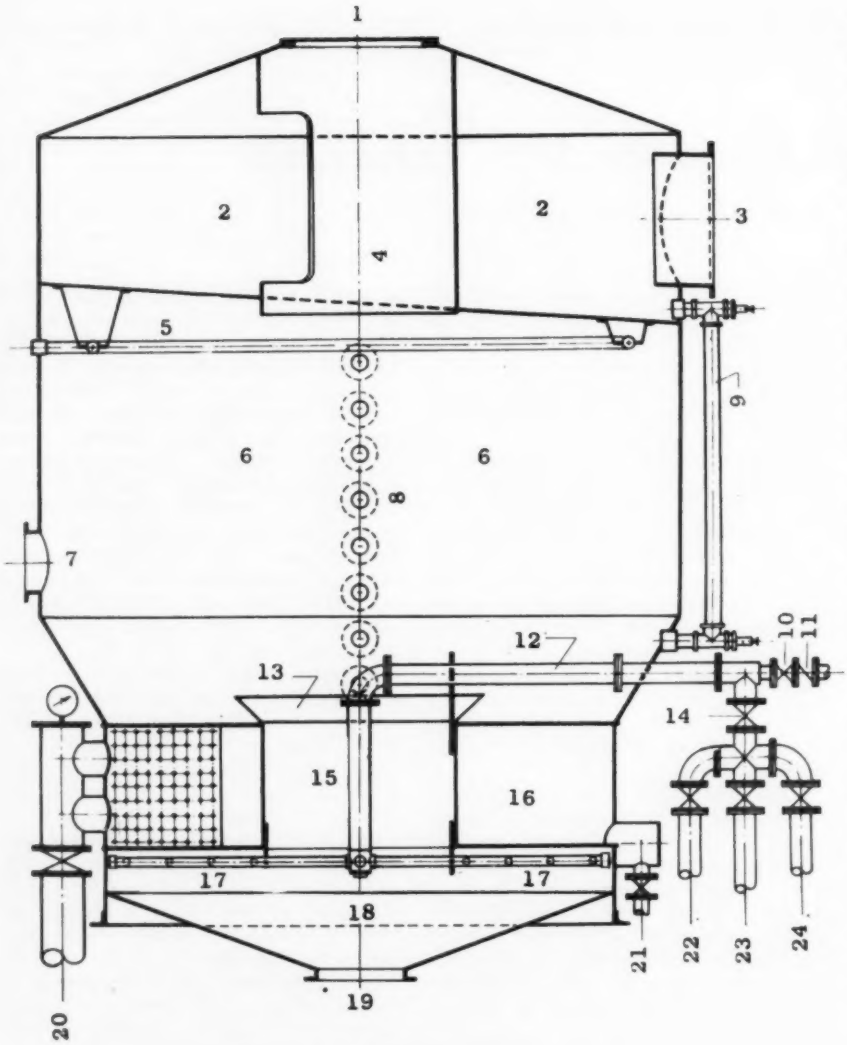
Hace muchos años el Profesor E. W. Kerr, quien ha estado a cargo del Departamento de Ingeniería de la Universidad del Estado de Luisiana, hizo muy interesantes observaciones instalando un gran número de termómetros calibrados en diversos puntos del cuerpo de una calandria. Determinó así las temperaturas y me dijo que no encontró dos lecturas idénticas, fluctuando las variaciones hasta diez grados Fahrenheit. Despues realizó cierto número de ensayos para mostrar la influencia de pequeñas proporciones de gases sobre la transimisión del calor. Los resultados fueron reportados por el Prof. Kerr en los Boletines de LSU y apesar de contener inapreciables revelaciones, han sido mayormente olvidados. La mayoría de nosotros, con la indiferencia predominante en la juventud, pensamos que sus conclusiones eran exageradas; y no les dimos el crédito que merecían.

Sin embargo, actualmente los hechos han demostrado que tal información estaba muy bien fundada, y que se ganaba mucho considerándola seriamente. Por tanto, la primera parte de nuestro proyecto fué alimentar el vapor a la calandria en un solo punto. En la parte interior de ésta entrada hay un distribuidor en forma de cuña que recibe el vapor, extendiendose dicho distribuidor desde la placa superior de tubos a la inferior, alargándose en el interior casi hasta el tubo central descendente. El vapor entra hacia la superficie calórica a través de un gran número de agujeros relativamente pequeños en los lados de la cuña, con la localización de los agujeros dispuesta y graduada para suministrar más calor cerca del casco o cuerpo del tacho que cerca del tubo central descendente. Esto permite una buena distribución al admitir calor en proporción a la superficie a través de la cual tendrá que pasar.

• Atentos a los siempre presentes gases residuales, los cuales se concentran a medida que la condensación tiene lugar; el problema subsiguiente es extraerlos por completo, de modo que prácticamente no quede nada en ningun punto que impida una buena transmisión del calor. Con una distribución inicial apropiada del vapor, los gases son empujados hácia adelante por el mayor volúmen; y la acumulación se formará en el punto más distante de la entrada del vapor, el cual está en el lado opuesto de la calandria. Sin embargo, parece muy improbable que se encuentren todos éstos gases acumulados en un sólo punto. Las pruebas han demostrado que se acumulan en varios puntos. Por tanto, la solución a éste problema consiste en el empleo de nó una, sino cuatro salidas para gases en el cuerpo de la calandria, alrededor de cuatro pulgadas por arriba de la placa inferior de tubos e igualmente espaciados para ocupar un arco de no menos de 90 grados, sobreponiendo un punto diametralmente opuesto a la entrada del vapor. Luego las dos conexiones de la izquierda son acopladas juntas, con un arreglo igual a la derecha. Las conexiones al centro de éstas dos horquillas son otra vez acopladas a una salida central, con válvula de control. Con éste sistema, perfectamente simétrico, cuando la válvula es estrangulada, se extraen iguales cantidades de gases de cada uno de los cuatro puntos iniciales de salida en la calandria. Lo anterior se muestra claramente en el dibujo que se acompaña.

• El sistema corriente de tener uno, dos, tres o cuatro conexiones separadas que se extienden desde la placa inferior de la calandria a través del fondo del tacho para extraer los retornos o aguas condensadas es difícil de mantener en la práctica, porque cualesquier salidero en éstas tuberías diluirá

*La Jackson Industries, de Birmingham, Alabama, quienes utilizan a Mr. Webre como Consultor, son los fabricantes del equipo azucarero descrito en éste artículo.



SECCION TRANSVERSAL

DE UN

TACHO AL VACIO DE ALTA VELOCIDAD

1—Orificio de acceso
2—Separador de Arrastres
3—Tubería de evaporación
4—Conducto ascendente
5—Serpentín rociador
6—Zona de licor
7—Registro para hombres
8—Mirillas
9—Drenaje arrastres
10—Válvula vapor
11—Válvula-cheque
12—Tubería de alimentación
13—Deflector de masacocida
14—Válvula de alimentación
15—Tubo central descendente
16—Calandria
17—Distribuidor de la alimentación
18—Fondo
19—Válvula de descarga
20—Vapor
21—Drenaje condensado
22—Miel A
23—Meladura
24—Miel B

la masa cocida mientras el tacho está trabajando; y admitirá azúcar dentro del agua condensada cuando el tacho está descargando. Por tanto, nosotros hemos investigado para encontrar una forma más sencilla y menos inconveniente.

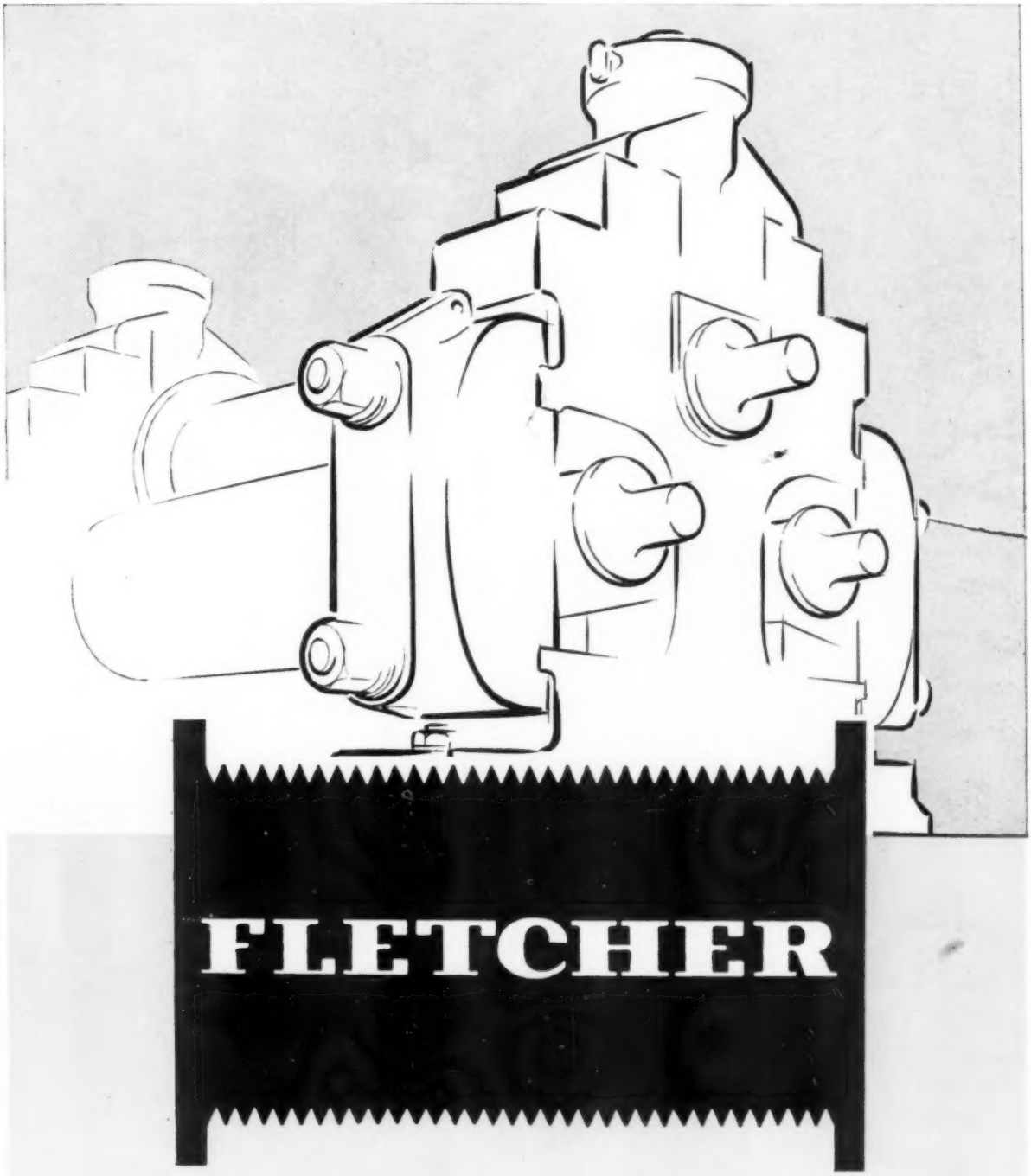
Lo hemos logrado simplemente soldando al costado de la calandria en un punto exactamente opuesto a la entrada de vapor, un niple o sección de tubo de 12″ o 14″, con la línea media o de eje de éste niple al nivel de la superficie superior de la placa inferior de tubos de la calandria. Luego se ha cortado una sección semi-circular del casco o cuerpo en éste mismo punto, permitiendo así que el agua condensada caiga libremente dentro del niple o tubo de 14″, desde cuyo fondo puede ser fácilmente drenada.

Es necesario diseñar el arreglo de los tubos de modo que se provea una senda de agua para facilitar su acceso a la salida; todo lo cual tambien se muestra en el dibujo a que anteriormente hacemos referencia. El agua entra en ésta senda desde los espacios entre los tubos individuales en diversos puntos, y fluye fácilmente hácia la salida, sin retornar dentro de la calandria, inundando y cegando parte de la superficie calórica. Las observaciones hechas en los niveles de condensados o retornos demuestran que los objetivos de éste diseño han sido bien alcanzados.

• En lo que se refiere al tubo central descendente, nuestra norma es construírlo con un diámetro 40% del correspondiente al tacho, con lo cual funciona muy bien, siendo dudoso si algo se gana en hacerlo mayor. Un deflector removible a un ángulo de 45 grados y una altura alrededor de ocho pulgadas, está cogido en la parte superior. Este deflector arroja la masa cocida en ebullición que asciende desde los tubos hácia el casco o cuerpo del tacho, evitando que se mezcle con el material enfriado que vá hácia abajo, desde la parte superior, para otro pase a través de la superficie calórica; con cuyo dispositivo se mejora la circulación. Como ventaja adicional, ésto tiene el mismo efecto derivado de incrementar el diámetro del tubo central descendente, sin pérdida de superficie calórica.

• Una ventaja considerable ha resultado del empleo de tubos de 3″ de diámetro y 36″ de largo, en lugar de 4″ de diámetro y 48″ de largo. Esta última dimensión es mas o menos la norma usual de medida. Por medio de éste cambio se logra tanta superficie calórica como con tubos de 4″ x 48″, y proporciones más favorables; porque se reduce substancialmente el volúmen de los piés de templas y dá mejor transmisión de calor. Gillette, Director Técnico de la Refinería C & H, en Crockett, California, tiene la firme convicción que el límite de la longitud de los tubos de las calandrias es de tres piés; y que cualesquier aumento más allá de ésta medida no rinde apreciables resultados. Nuestra experiencia confirma éste juicio. En el trabajo de refinerías nosotros hemos obtenido los mejores resultados con tubos de cuatro pulgadas y solamente treinta pulgadas de largo.

Para el trabajo normal en azúcares crudos los tubos de tres pulgadas dan excelentes resultados. Si la viscosidad de la masa cocida es excesivamente alta, se recomiendan tubos de cuatro pulgadas. Esto aplica tambien para el trabajo ordinario de refinerías, porque para lograr rendimientos altos las templas deben descargarse bien apretadas o con punto alto. Lo mismo resulta cierto para los tachos de crudos o bajo grado en las fábricas de azúcar de remolacha, y por las mismas razones; especialmente pro-



el nombre a recordar—

PARA TODA CLASE DE MAQUINARIA AZUCARERA

GEORGE FLETCHER & CO. LIMITED

Masson Works • Litchurch Lane • Derby • Inglaterra • Cablegramas: 'Amarilla' Derby Telex • Teléfono: Derby 45817 • Telex 37514

P7162

En el mundo entero los fabricantes de comestibles y bebidas imparten radiante claridad a las mismas, con Dicalite—polvos auxiliares de filtraje que llenan las más escrupulosas exigencias. Además, el nuevo servicio Dicalite individualizado para cada cliente, responde a las demandas especiales que usted pueda hacer para aun mayores requisitos de pureza, confiabilidad y claridad.
Si todavía no usa usted Dicalite, permita que le recomendemos la aplicación de estos polvos auxiliares a sus problemas de filtraje.
CLARIDAD
Dicalite®
POLVOS AUXILIARES DE FILTRAJE
DICALITE DEPARTMENT
GREAT LAKES CARBON CORPORATION
612 So. Hill Street, Los Angeles 17, California

SMITH
MAQUINARIA AZUCARERA
ENGRANAJES REDUCTORES PARA MOLINOS MOVIDOS A TURBINA
A. & W.
SMITH
& CO. LTD.
INGENIEROS DE FABRICAS
Y REFINERIAS DE AZUCAR
21 MINCING LANE
LONDRES · E·C·3
Direccion Cablegrafica :
"Sugrengine, London"
TALLERES:
COOK STREET
GLASGOW C5

cesando remolachas heladas, porque en éste caso la cantidad excesiva de rafinosa incrementa la viscosidad mas allá de lo normal.

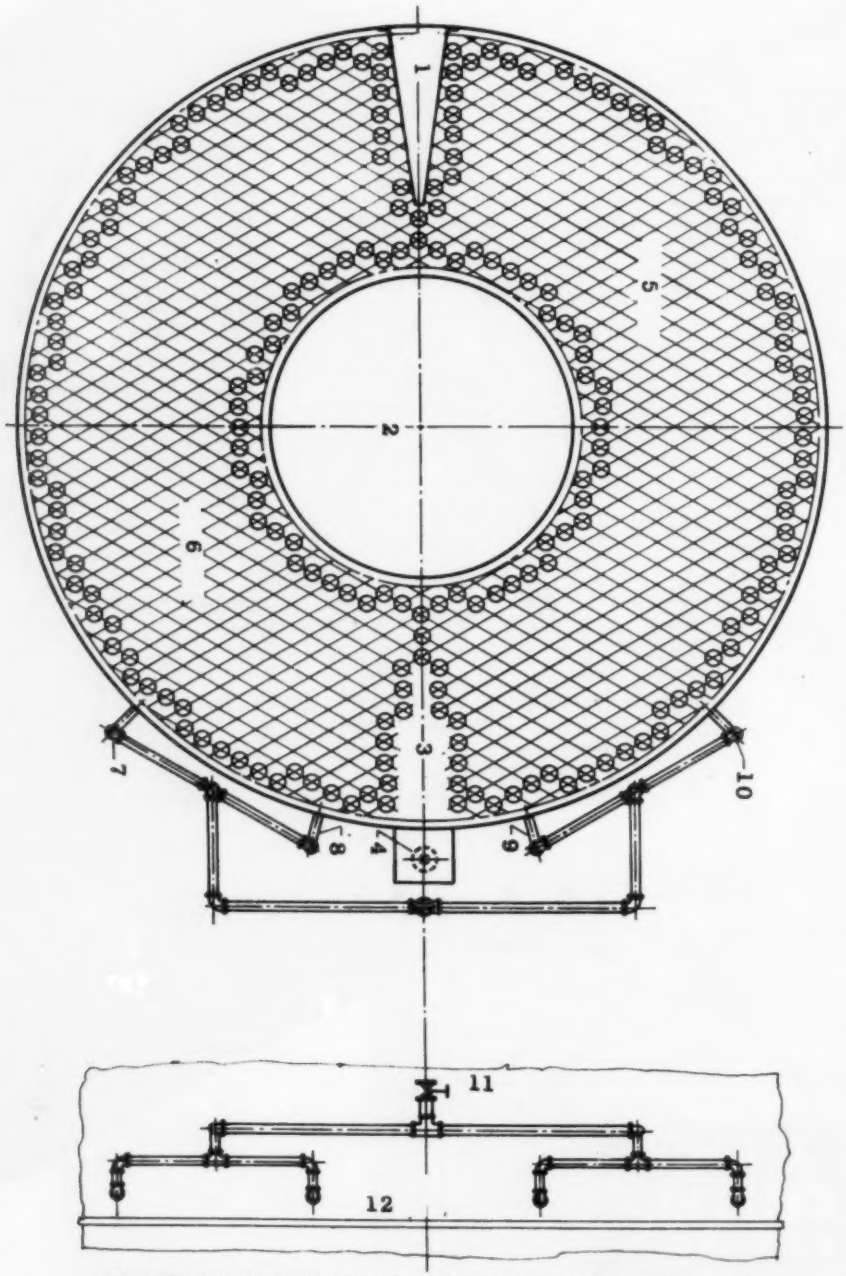
El di ámetro de la zona de cocción junto a la calandria resulta inmediatamente aumentado en un 25% por medio de un cono truncado invertido, cuyos lados están en un ángulo de 30 grados con relación a la vertical. Desde éste cono truncado hácia arriba la forma es cilíndrica. La finalidad de éste diseño es reducir la carga hidrostática de la masa cocida de un volúmen dado incrementando el diámetro del tacho; reduciéndose así el tiempo de cocción de la templa y mejorándose la circulación. La altura normal de la masa cocida al completarse una templa es alrededor de seis pies sobre la calandria, con circulación natural. Este diámetro aumentado de los tachos sobre la calandria es una vieja idea que ha sido remozada. Siempre tuvo mérito; pero nunca le fué reconocido hasta recientemente.

En el Tacho al Vacío de Alta Velocidad la parte más alta de la zona de cocción constituye el separador de arrastres, de muy sencillo pero efectivo diseño, fácilmente accesible para limpiarlo y de amplias proporciones. La salida de la evaporación, en lugar de ser por la parte superior del tacho, es por el costado, próxima al domo; y la altura adicional de la sección del separador es bastante más que el diámetro de la tubería de evaporación, permitiendo amplio margen de paso libre. Hay una división circular plana, adecuadamente asegurada, entre la sección del separador de arrastres y la sección de la masa cocida, inclinada hácia la salida de la evaporación, con el drenaje justamente debajo de ésta; conectada a una tubería exterior dirigida hácia abajo la cual entra de nuevo en el cuerpo o casco por arriba de la placa de tubos. Doble T con conexiones de vapor para limpieza están en cada recodo.

Exactamente en el centro de la división entre la zona de cocción de licor y las secciones del separador de arrastres está soldada una tubería vertical que se extiende hasta el domo. Al costado de ésta tubería, en posición opuesta a la salida de la evaporación, hay una gran tronera rectangular para el paso intacto y sin restricción de los vapores procedentes de la zona de cocción. La tubería es del mismo diámetro que el tubo central descendente, el cual es a su vez considerablemente mayor que la salida de la evaporación; por tanto las velocidades resultan muy reducidas. Segun los vapores giran y se dirigen hácia la salida de la evaporación, la velocidad disminuye aún más; por tanto no hay arrastres posibles, ni hay pérdidas por fricción.

• El domo es de forma cónica, con los lados a un ángulo de 20 grados con respecto a la horizontal. Se suministra una abertura en el centro con una cubierta atornillada para poder introducir o extraer el Circulador Mecánico y sus accesorios; si se instala un circulador al tacho.

El accesorio más importante de un tacho es un sistema adecuado y eficiente de alimentación; en consecuencia su diseño exige considerar los aspectos fundamentales de la operación. Constituye un grave error asumir que al alimentar simplemente al medio del tubo central descendente se obtendrá la distribución deseada.



CALANDRIA PARA TACHO AL VACIO DE ALTA VELOCIDAD

MOSTRANDO DISTRIBUCION TUBOS, VAPOR,

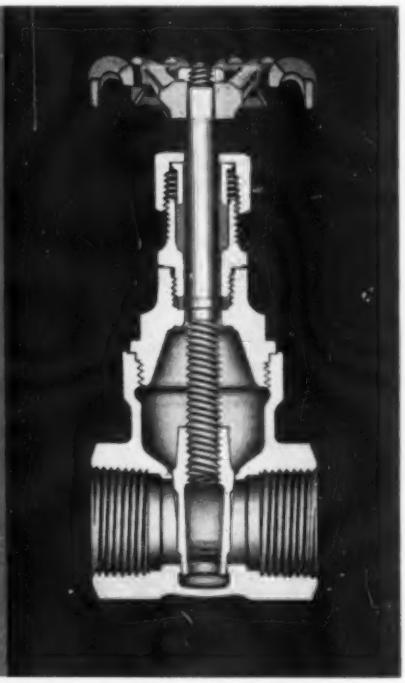
DESALOJOS GASES Y DRENAJE

1—Distribuidor de vapor
2—Tubo central descendente
3—Senda de agua
4—Salida condensados
5—Tubos
6—Tubos
7—Desalojo gases
8—Desalojo gases
9—Desalojo gases
10—Desalojo gases
11—Válvula desalojo gases
12—Placa de tubos

COMPROBACION DE CALIDAD

La calidad de cada producto Crane es comprobada en cada paso de su producción. Crane dispone de los recursos industriales más completos de ingeniería, fabricación y prueba para todos sus productos.

VALVULA CRANE DE BRONCE NO. 438, DE NUEVO DISEÑO



El Nuevo Diseño de Crane Proporciona Mayor Fuerza a Las Válvulas de Bronce Sin Aumentar su Tamaño...Su Nueva y Fuerte Construcción Ofrece Mejor Alineamiento y Máxima Protección Contra los Esfuerzos Excesivos

Las válvulas Crane de bronce han demostrado ser siempre las mejores en su clase en las operaciones de los centrales azucareros . . . pero ahora han sido nuevamente diseñadas para hacerlas aún más eficaces y útiles.

El nuevo diseño cilíndrico del cuerpo—como el de las válvulas de acero de alta presión—provee mayor resistencia sin aumentar el peso, ofrece máximo refuerzo a las tensiones de la línea así como a la acción de acuñamiento del disco. Para dar aún mayor resistencia, el prensaestopas de estas válvulas se enrosca ahora *dentro* del casquete, y el contacto del vástago más alargado suministra mejor soporte, alineamiento más exacto y menos desgaste de la empaquetadura.

Averigüe cómo el nuevo diseño y la resistencia de las válvulas Crane de bronce pueden proporcionarle a Ud. un cierre más hermético, un funcionamiento más duradero y operaciones libres de dificultades. Llame al Representante Crane de su localidad hoy mismo.

Válvula Crane de Bronce No. 438. Tamaños: 0.6 cm. a 8 cm. Presiones de Trabajo: Hasta 125 libras de vapor saturado ó 200 libras de agua* a 93°C. Hasta 200 libras de aceite o gas a 66°C. *La clasificación del agua y del aceite no son de choque térmico.

Crane International pone a su disposición las válvulas Crane desde la fuente de producción preferida por Ud.—ya sea por precio, ubicación geográfica o servicio.

VALVULAS · CONTROLES ELECTRONICOS · TUBERIAS · PLOMERIA · CALEFACCION · ACONDICIONAMIENTO DE AIRE

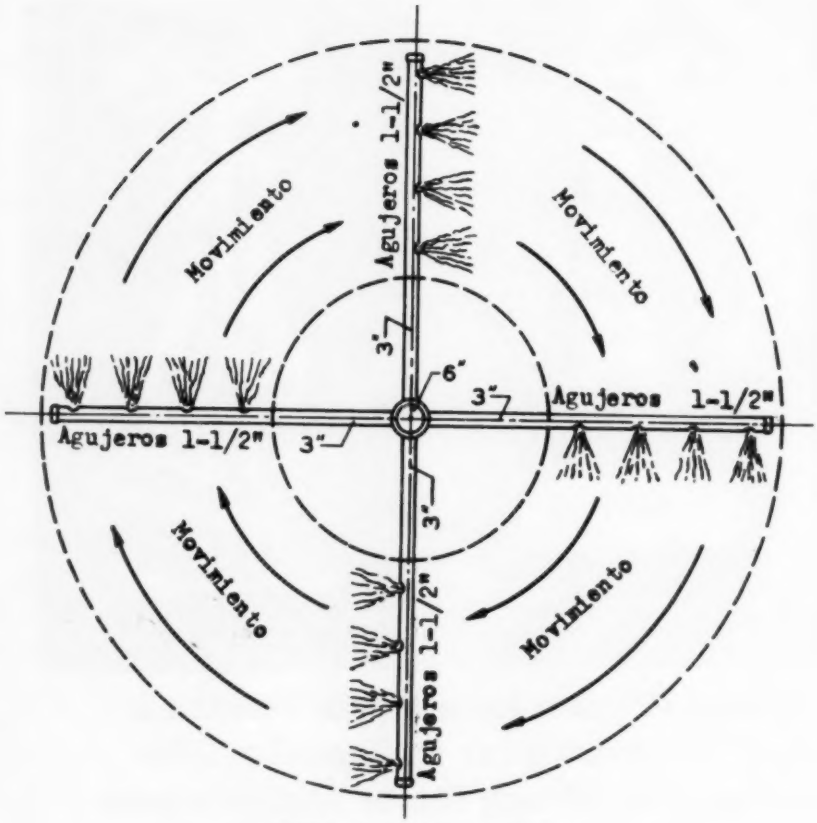
CRANE

INTERNATIONAL

Oficina Internacional: 300 Park Avenue, New York 22, N.Y., E.U.A.

FABRICAS EN

E.U.A. CANADA INGLATERRA FRANCIA HOLANDA ITALIA



VISTA DE PLANO DE LA

DISTRIBUCION ALIMENTACION EN EL FONDO

TACHO AL VACIO DE ALTA VELOCIDAD

Es muy difícil lograr una dispersión satisfactoria de la meladura, miel o sirope entrante; siendo ésta la principal causa de un funcionamiento defectuoso, especialmente con materiales viscosos de bajo grado. En nuestro diseño la alimentación entra a través del cuerpo del tacho justamente por arriba de la calandria y se dirige horizontalmente al medio del tubo central descendente, a uno de cuyos lados queda sustentada. La tuberia despues gira con un codo y se dirige hácia abajo hasta un punto justamente debajo de la calandria, donde se instala una cruceta con cuatro ramas horizontales, cada una con la mitad del diámetro de la tubería e igualmente espaciadas, y sostenidos dichos ramales por escuadras individuales soldadas al fondo del tubo central descendente. Los extremos de los ramales están cerrados, disponiendo solo de cuatro agujeros para la alimentación, con la mitad del diámetro del ramal y localizados horizontalmente debajo de los tubos. De ese modo la alimentación entrante queda toda debajo de la calandria y recibe un impulso en remolino, en la dirección de las manecillas de un reloj, hácia la masa cocida que se encuentra en el fondo del tacho; lográndose una distribución excelente. Esta agitación resulta adicionalmente acentuada admitiendo cierta cantidad de vapor de escape dentro de la tubería de alimentación, en la sección fuera del tacho, entre éste y la válvula de control de la alimentación; todo lo cual constituye una modificación a la idea original de Claassen. El vapor de escape se deja entrar despues que se ha cerrado la alimentación; proporcionando así mejor circulación durante el período final, mas difícil por la concentración. El sistema ha resultado una mejora principal y destacada dondequiera que se ha usado; y no envuelve arreglos complicados.

Resulta claro que éste nuevo sistema de alimentación no puede usarse si el tacho está equipado con Circulación Mecánica. La meladura o la miel debe entrar bien por el fondo, cerca de la válvula de descarga; o a través de la válvula misma, si está provista con una abertura de entrada.

Los siguientes equipos se recomiendan para permitir un control adecuado de los tachos al vacío:

1) Debe disponer de un regulador satisfactorio, capaz de sostener el vacío dentro de una décima de una pulgada de mercurio, con relación al punto deseado.

2) Un aparato preciso para indicar y registrar la sobresaturación desde 1.00 a 1.75 y para purezas desde 50 a 100.

3) Un embudo de semillaje para introducir el azúcar pulverizada dentro del tacho en el momento apropiado, conectándolo al cuerpo o casco justamente sobre la calandria.

4) La Circulación Mecánica será tratada en el próximo artículo de ésta serie.

Se suministran los accesorios usuales como: Lucetas o Mirillas de cristal, Sonda para muestras con palangana, Indicadores de Presión y de Vacío, Niveles de agua en la calandria, Registros de entrada para hombres, &.

El funcionamiento y capacidad dependen de las condiciones de operación, las cuales son muy variables. Para dar una idea de lo que puede hacerse con los Tachos al Vacío de Alta Velocidad, expondremos las lecturas siguientes tomadas en un central azucarero de Puerto Rico, muy bien dirigido y operado; representando los datos del trabajo de los tachos en su rutina diaria: Véase(*)

■

(*)

Tipo de templa	Presión del vapor	Vacío	Pureza	Brix de la Alimentación	Brix de la M. C.	Duración, horas	Promedio "U"
"A"	6.5	25.0"	84.0	67.2	92.4	1:13	121.0
"B"	4.6	26.5	73.2	69.2	94.6	1:50	85.0
"C"	4.3	26.5	58.5	67.0	95.6	2:35	50.1

Nota: **El volúmen de las templas fué alrededor de 1350 pies cúbicos, en un tacho de 12′ 0″ x 14′ 0″.**

Record Mundial de Producción de Azúcar

El Departamento de Agricultura de los Estados Unidos hace notar que con un total de 60,937,000 de toneladas cortas de azúcar centrífuga elaboradas en el mundo para el año-zafra 1960-1961, se ha superado en 7,300,000 toneladas la cosecha anterior y se ha batido un record de producción. El azúcar nó-centrífuga fabricado se ha elevado casi a ocho millones de toneladas cortas, debido principalmente al incremento de producción de éste tipo de azúcar por la India.

Los cinco principales productores de azúcar centrífuga en 1960-61 fueron: la URSS 7,250,000, Cuba 7,150,000, los Estados Unidos 5,260,000, India 3,900,000 y Brasil 3,820,000.

La producción azucarera aumentó 2,800,000 toneladas en Europa Occidental y 1,200,000 toneladas en Europa Oriental. Francia y Alemania Occidental tuvieron el mayor aumento absoluto en Europa Occidental. Francia más que duplicó su producción al elaborar 3,000,000 de toneladas cortas.

Note cómo el herbicida "Karmex" aplicado en la hilera controla las malezas en este campo de caña.

Menos Costos—Mejor Control de Malezas en la Caña con KARMEX de Du Pont

Los cultivadores de caña de azúcar pueden controlar las malezas de hoja ancha y de gramíneas eficaz y económicamente, aun en regiones de bajo costo de mano de obra, con un programa basado en el herbicida diurón "Karmex" de Du Pont.

"Karmex" es un herbicida de preemergencia que puede aplicarse a la superficie de un campo cultivado antes de la zagra y emergencia de las malezas sin afectar a la caña en forma alguna.

El "Karmex" de Du Pont se ha usado comercialmente en campos de caña desde 1953. Seis años de uso en gran escala, respaldados por la investigación continua y el trabajo experimental, han probado a las claras el control eficaz y las ventajas de reducción de costos del "Karmex".

EL CONTROL QUIMICO DE MALEZAS CON "KARMEX" OFRECE TODAS ESTAS VENTAJAS

- **ECONOMICO**—El "Karmex" elimina el costoso desyerbe a mano—usted reduce sus costos de trabajo en el control químico de malezas con "Karmex".
- **EFICAZ**—Dosis bajas controlan eficazmente la mayor parte de plantitas y semillas germinadas tanto de malezas de hoja ancha como de gramíneas.
- **FACIL DE APLICAR**—El "Karmex" es un polvo mojable y listo para ser mezclado con agua. No es inflamable, ni corrosivo, ni volátil.
- **GRAN RENDIMIENTO**—Cuando las malezas son controladas con "Karmex", la caña saca todo el provecho de las sustancias nutritivas del suelo, de la humedad y del sol—requisitos para un rendimiento máximo. Para obtener más información de cómo el "Karmex" de Du Pont puede ayudarle a controlar económicamente las malezas en sus campos de caña, llene el cupón y envíenoslo.

DU PONT MARCA REGISTRADA **KARMEX®**

herbicida diurón

COSAS MEJORES PARA VIVIR MEJOR . . . GRACIAS A LA QUIMICA

E. I. du Pont de Nemours & Co. (Inc.)
Room 2545 Nemours Building
Wilmington 98, Delaware, U. S. A.

Sírvanse enviarme información técnica sobre el control de malezas en campos de caña de azúcar con el herbicida diurón "Karmex".

*Nombre*_____

*Compañía*_____

*Dirección*_____

*Ciudad*_____ *País*_____

CON EL HD-16 USTED OBTIENE MAYOR ROBUSTEZ Y ECONOMIA

Este conjunto de fuerza convierte los 150 cf netos del motor en 12.700 Kg de fuerza en la barra de tiro — o sea toda la potencia que Vd. necesite para realizar las labores más árduas en los cañaverales y esto, con menos combustible y requiriendo menos mantenimiento que cualquier otro tractor de mayor potencia.

Que se economiza combustible, es un hecho. El HD-16 está equipado con uno de los motores de la Serie 16000 el cual trabaja con un promedio de 8.5 a 27 por ciento de menos combustible que cualquier otro motor de potencia similar. Su sistema de combustión, característico, en los motores Allis-Chalmers, el combustible es completamente quemado, sin dejar residuos y dura más sin necesitar reparaciones.

Otra característica exclusiva de los tractores Allis-Chalmers que Vd. apreciará, son los sellos herméticos, cojinetes cónicos en los rodillos, ruedas de guía y rodillos soporte de los carriles. Estos cojinetes son permanente lubricados en la fábrica y certificados que nunca necesitarán engrase adicional. Los cojinetes de rodillos cónicos en estos puntos herméticamente sellados evitan la entrada de polvo o lodo . . . aminoran el efecto de fricción . . . ahorran gastos de servicio y además reducen pérdida de potencia.

Con el HD-16 Vd. obtendrán los mejores resultados en toda labor agrícola tal como arados de discos, subsoladores, remolque o cualquier otra tarea pesada. El Distribuidor Allis-Chalmers de Maquinaria Agrícola en su región le demostrará el rendimiento y la economía del HD-16.

OBTENGA ESTAS CARACTERISTICAS EN SU NUEVO TRACTOR

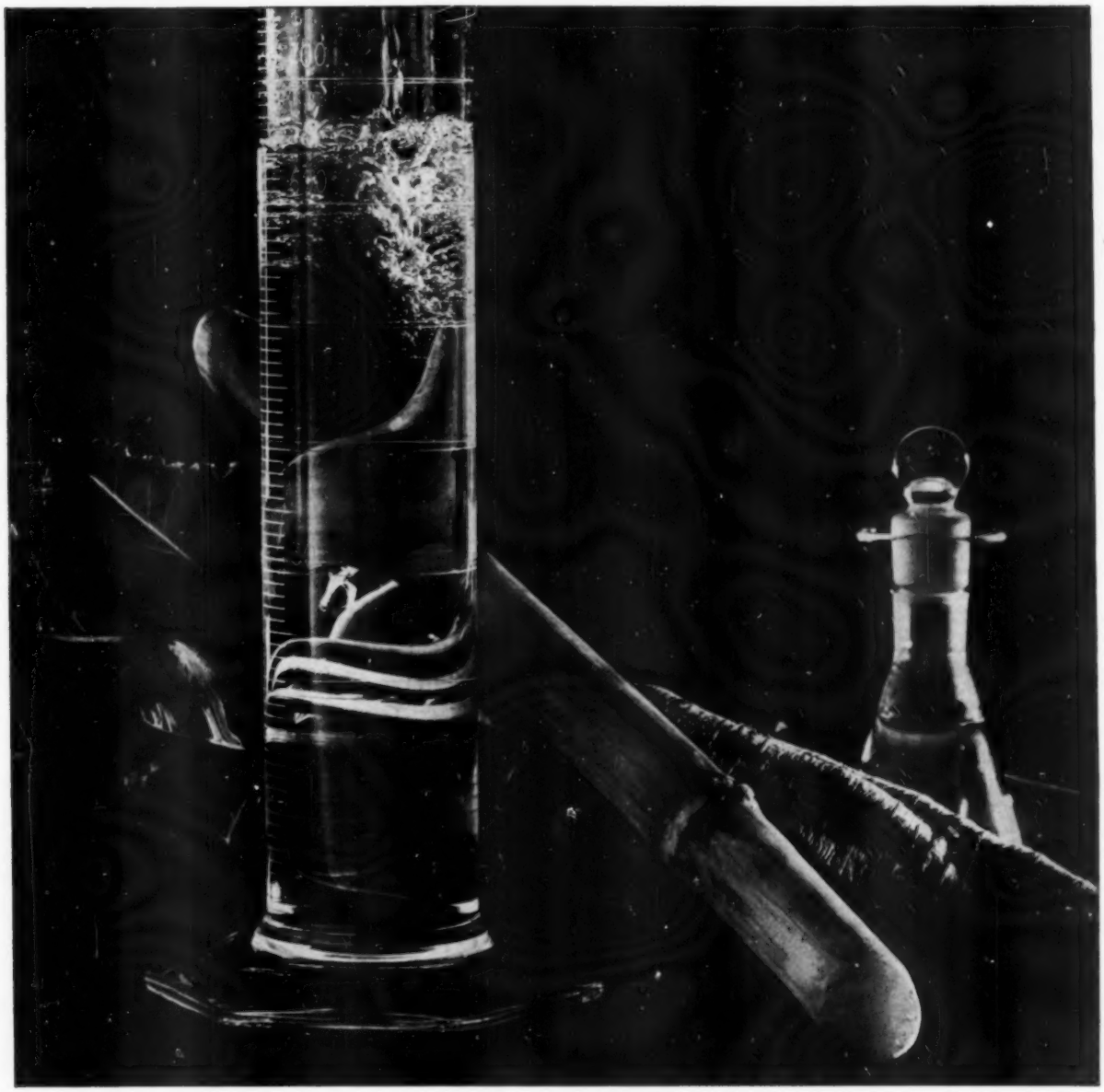
- El motor Diesel más eficaz existente
- Lubricacion Permanente en todo el sistema de tracción
- Bastidor principal completamente de acero
- Zapatas tratadas térmicamente

ALLIS-CHALMERS INTERNATIONAL
Departmento AZ 1261, Milwaukee, Wisconsin, U.S.A.

FABRICANTES DE MAQUINARIA
DESDE 1847

ALLIS-CHALMERS AL SERVICIO DE LA INDUSTRIA MUNDIAL · CONSTRUCCION

FUERZA ELECTRICA · MINERIA · AGRICULTURA · OBRAS PUBLICAS · ENERGIA NUCLEAR · INVESTIGACIONES BASICAS



Azúcar libre de bacterias, en menos tiempo, con Filtración Celite

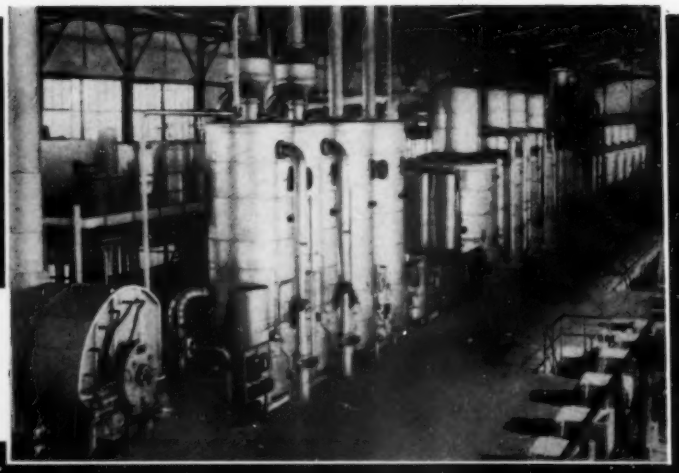
Las bacterias termofílicas son eliminadas completamente de los azúcares de caña y de remolacha cuando se usan los auxiliares filtrantes diatomáceos Celite®. Y con la rápida velocidad de flujo Celite, el proceso entero de filtración se acelera desde el comienzo hasta el final. Velocidades de flujo aún mayores pueden obtenerse combinando la defecación cal-ácido fosfórico con la Filtración Celite. Esta combinación además reduce el fallo del carbón animal ó del carbón vegetal activado por acumulación de impurezas y suciedad y añade los beneficios de una decoloración parcial.

Celite se extrae de canteras conteniendo los depósitos más puros y se elabora y embarca desde la planta diatomácea más grande del mundo. Esta fuente de abastecimiento todo-en-una-sola-unidad, cuidadosamente explotada y controlada, permite ofrecer un abasto uniforme y continuo de todos los grados, standard y especiales, de auxiliares filtrantes. Todo eso garantiza resultados de alta eficiencia dondequiera y todas las veces que Vd. use Celite. Actualmente entre los distintos grados de auxiliares filtrantes Celite se incluye Celite Perlite. Vea Vd. al más próximo Ingeniero de Filtración J-M para detalles ó escriba á: Johns-Manville. Box 280, New York 16, N.Y. En el Canadá: Port Credit, Ontario. Cable: Johnmanvil.

Los auxiliares filtrantes de la División Celite, cuando se usan como tales, no son considerados aditivos alimenticios segun está determinado por el Acta Enmendada FD&C, Sección 201(s).

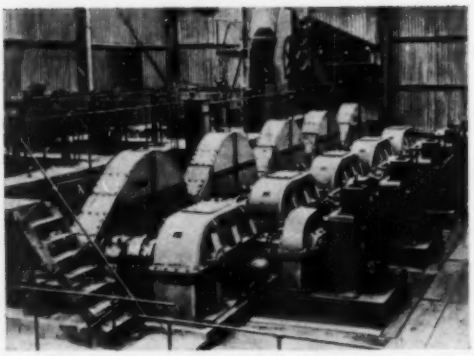
JOHNS-MANVILLE

TODO

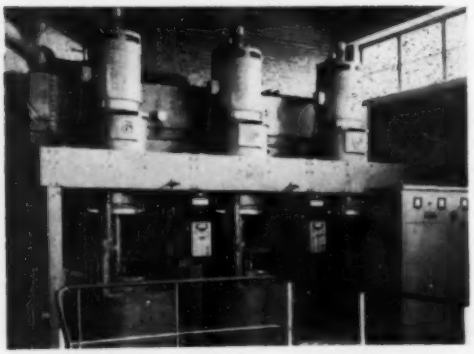


en su FÁBRICA DE AZÚCAR de caña o de remolacha

Planta de cincos molinos.
Central Azucarero Ureña (Venezuela)



Centrifugas completamente automáticas.
Fábrica de azúcar de Vauciennes (Francia)



EDIFICIOS
- Estructuras metálicas

MAQUINARIA DE ELABORACIÓN
- Difusiones continuas RT y DdS
- Molinos de caña
- Aparatos de alcalización y sulfitación
- Clarificadores
- Filtros
- Evaporadores
- Tachos al vacio
- Centrifugas

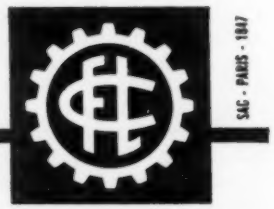
PRODUCCIÓN DE ENERGIA
- Calderas a vapor
- Turboalternadores
- Motores eléctricos

EQUIPO DE MANUTENCIÓN
- Grúas
- Transportadores

INSTALACIONES COMPLETAS

lo puede construir

FIVES LILLE - CAIL



7, rue Montalivet, PARIS (8e) - Tél.: ANJou 22-01 et 32-40

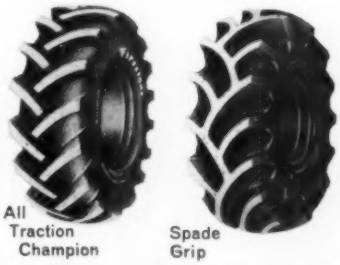
Aumente las Ganancias de la Zafra

de 3 Formas

1. Carros de Caña Firestone ELECTRIC

Puede ahorrar tiempo en el acarreo de la caña del campo al trapiche usando carros de caña Firestone Electric. Los carros Firestone Electric estan construidos con fuertes bastidores de acero y ejes de acero alto en carbono. Las reforzadas ruedas estan equipadas con cojinetes cónicos y neumáticos Firestone para larga duración y facilidad de rodaje. Hay muchos tamaños y estilos disponible para satisfacer sus necesidades particulares.

2. NEUMATICOS DE TRACTOR Firestone



All Traction Champion — Spade Grip

Usted recibe plena fuerza de tracción en la barra en cualquier campo y condición de tierra con los neumáticos de tractor Firestone. En los campos mojados el Firestone Spade Grip no tiene igual para autolimpieza y tracción. En condiciones de tierra normales el Firestone All Traction Champion le dará el mejor servicio. El nuevo Caucho X-F de Firestone dura mucho más. El compuesto especial de los costados resiste envejecimiento, agrietamiento y averías por flexión. Las cuerdas "Firestone Shock-Fortified" guardan contra averías por impacto.

3. NEUMATICOS DE CAMION Firestone

Super All Traction — Transport Heavy Duty

Ya sea que conduzca en el campo o en la carretera hay un neumático de camión Firestone adecuado para sus necesidades. El Super All Traction está diseñado especialmente para dar tracción extra en campos y caminos de tierra — el Heavy Duty Transport proporciona servicio más largo y costo de operación más bajo en todos los tipos de servicio por carretera.

•

Vea a su Distribuidor Firestone por carros y neumáticos Firestone para Cosechas de Azucar Más Lucrativas.

FIRESTONE INTERAMERICA COMPANY Akron 17, Ohio U. S. A.

CARGADORAS DE CANA *de pluma-flexible* BROUSSARD

Cargadora Modelo FB-20, tipo tropical, para servicio pesado, montada sobre Caterpillar D-4, con Apilador por Empuje

VENTAJAS:

- **Sencillez extrema**
- **Perfecta Visibilidad para el Operador**
- **Pluma flexible para carga plena y más rápida**
- **Eficiencia Demostrada (Desde 1950)**
- **La más alta calidad en materiales y mano de obra.**

La Cargadora Broussard puede ser fácilmente instalada en destino sobre diversos tipos disponibles de tractores de ruedas u orugas; y tambien fácilmente desmontable al final de la cosecha para permitir el uso ordinario del tractor. Breve dato: capacidad 2000 lbs/minuto (bajo las condiciones de Luisiana).

International Farmall 450
Louisiana

Track-Marshall
Rhodesia

Fordson-Major
Puerto Rico

BROUSSARD MACHINE COMPANY

ST. MARTINVILLE, LUISIANA

Simazine

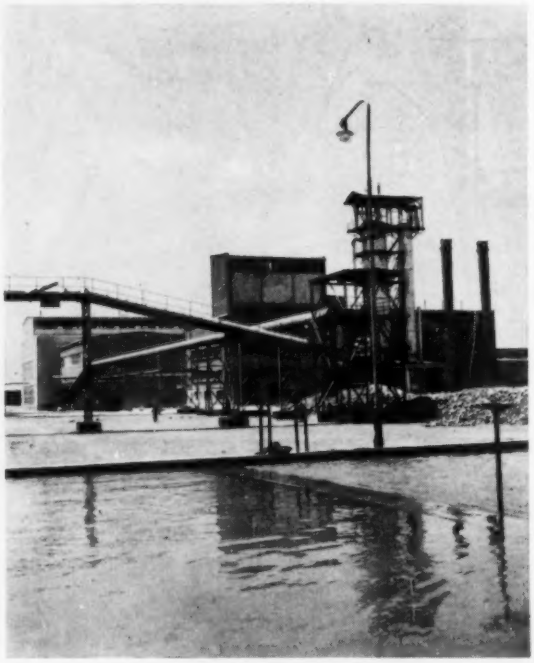
Nuevas perspectivas en la lucha contra las malas hierbas

Un solo tratamiento en pre-emergencia mantiene a las jóvenes plantas de Caña de azúcar libres de malas hierbas durante meses.

persistencia selectividad seguridad

Los herbicidas a base de Simazine, selectivos para la Caña de azúcar, se expenden:

En los Estados Unidos y en Puerto Rico, por los distribuidores de Geigy Agricultural Chemicals, Ardsley, N.Y., como	**Geigy Simazine 80 W**
En América Central, América del Sur, Cuba, Haití, República Dominicana, Africa del Sur, Filipinas y Formosa, por los distribuidores de J. R. Geigy S. A., Basilea (Suiza), como	**Gesatop 50 M**
En los paises del "Commonwealth" (excepto Australia) a través de Fisons Chemicals (Export) Ltda, 95, Wigmore Street, London W1, como	**Simazine 50W**



Fábrica de azúcar de remolacha construída por CEKOP en FARIMAN, IRAN.

POLONIA

SIRVE A LA INDUSTRIA AZUCARERA CON

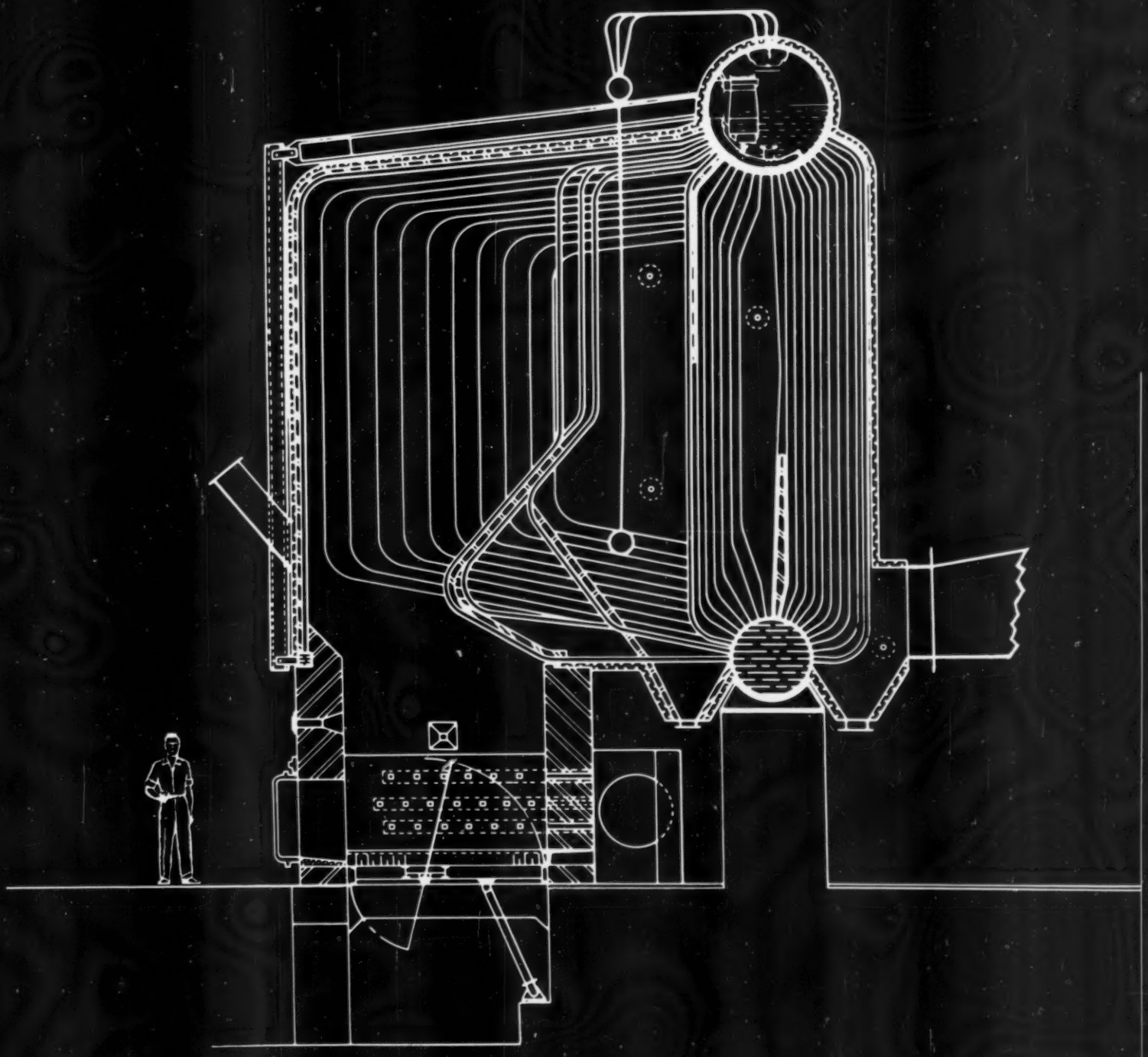
Diseño de Fábricas, Construcción, Equipos

- **Diseños completos, técnicos y de los edificios, con todas las máquinas y equipos necesarios para la elaboración de azúcar de caña y de remolacha.**
- **Diseño e instalación de maquinaria y equipos para modernizar fábricas existentes.**
- **Estudios independientes, técnicos y económicos, de todos los aspectos de la producción azucarera.**

Incluyendo todas las fases de la producción de azúcar—equipos, transporte, fuerza—la técnica avanzada de los Diseños Industriales Polacos se encuentra ahora al alcance de todo el mundo. Para información completa diríjase directamente á:

CEKOP

Diseños Industriales & Construcción
Mokotowska 49, P. O. Box 112
WARSZAWA, POLAND
cablegramas: Cekop—Warszawa.



Esta caldera mejorada B & W quemando bagazo reduce los costos de generar vapor en los centrales azucareros

Esta caldera Babcock & Wilcox ha sido diseñada específicamente para quemar bagazo con máxima economía. He aquí como reduce los costos:

Puede trabajar toda la zafra sin paradas para limpieza. Reacciona y responde instantáneamente a oscilaciones desde un cuarto a carga completa. Los hogares de descarga proporcionan una fácil disposición de las cenizas.

Las celdas Ward permiten una reserva de capacidad, eliminando la necesidad de quemar combustible auxiliar. No necesita ventilador de tiro inducido y la caldera tiene insignificantes necesidades de fuerza accesoria.

La presión del vapor es controlada por los registros de aire, los cuales son fácilmente regulados por el operador. El arranque y almacenaje resultan simplificados porque el supercalentador es prontamente desaguable.

Para resolver el problema de la mejor utilización de su bagazo, diríjase a la más cercana oficina de ventas B & W o escriba a: The Babcock & Wilcox Company, Overseas Sales, 161 East 42nd. Street, New York 17, New York.

Babcock & Wilcox

desde **bagazo** **hasta** **láminas**

ganancia

No queme su bagazo APROVECHELO

Solicite detalles acerca del sistema INTERBAGASSE, el más moderno equipo para la fabricación de láminas de bagazo aglomerado. La lámina INTERBAGASSE es un material adaptable de la más alta calidad que ofrece excelente combinación de superficie y estructuración uniformes. Escribanos, ¡hoy mismo!

interbagasse

BASEL - SUIZA - APARTADO 237 - TELEF. 247800

Modelo de plataforma y estacas International Serie 160 mediano tiene varios usos en obras de construcción. Selección de motores, con propulsión en dos o todas las ruedas.

Camiones International siempre los preferidos

Porqué? Pues, porque son . . .

DISEÑADOS por especialistas con 54 años de experiencia.
MÁS FUERTES para que duren más . . . menos mantenimiento, mayores ganancias.
IMPULSADOS por una amplia selección de motores económicos—"Seis" y "V-8."
A LA MEDIDA para cualquier trabajo—la Línea Más Completa del Mundo.

El Travelette de 6 pasajeros, con carrocería expreso Bonus-Load, transporta al personal y los equipos.

Camión de volteo liviano Serie 130, muy versátil. Se ofrece también con propulsión en ambos ejes.

INTERNATIONAL HARVESTER

Camiones International

International Harvester Export Company
180 N. Michigan Avenue
Chicago 1, Ill., E. U. A.

para mejor azúcar refinado

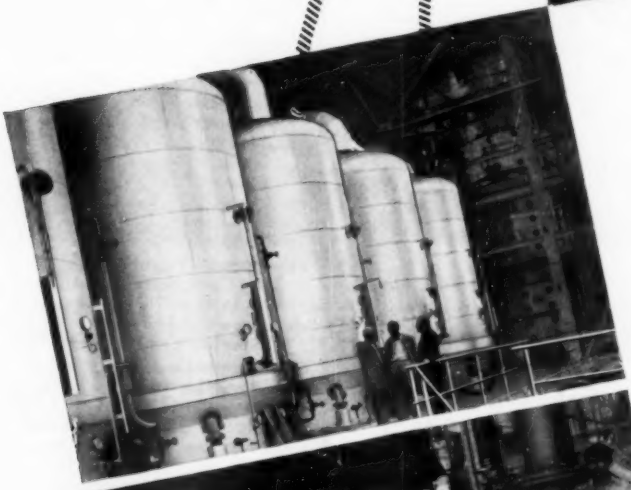
NORIT® SUPRA

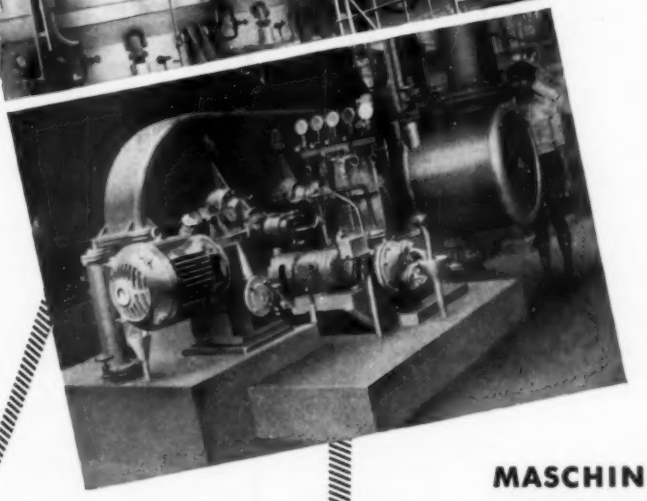
NORIT

UNITED NORIT SALES CORPORATION LTD-AMSTERDAM-HOLLAND

INGENIOS COMPLETOS

INCLUSO
INSTALACIONES PARA CUADRADILLOS Y PILONES DE AZUCAR





para la fabricación de azúcar de caña hasta el azúcar refinado de primera clase.

Sobre la base del desarrollo más moderno de la técnica azucarera transformamos instalaciones de modelo anticuado en tales de máxima rentabilidad.

Instalaciones de trapiches con impulsión de grupos individuales. Especialmente transformación de trapiches aticuados. **Centrifugas** para azúcar blanco, azúcar crudo, productos medios y posteriores.

Filtros para todos los problemas de filtración.

Instalaciones secadoras para la industria azucarera.

Centrales de energia para todas presiones y capacidades.

Suministro de máquinas y aparatos singulares y construcción de ingenios completos también para la elaboración de remolachas.

MASCHINENFABRIK BUCKAU R. WOLF
AKTIENGESELLSCHAFT · GREVENBROICH-NEUSS
(ALEMANIA OCCIDENTAL)

9068 s

Nuevos Directores de la SuCrest

En la reunión anual de accionistas de la American Molasses Company celebrada el 18 de Octubre se eligieron los siguientes nuevos Directores: Jervis J. Babb, Adolf A. Berle, Frank M. Chapman, Morton L. Deitch, Abe Fortas, Harold F. Saufley, Robert Simons, Ellis Slatoff, Frank C. Staples, Felix Taussig y Richard M. Taussig.

El Presidente de la Compañía Frank C. Staples, anunció la elección de los siguientes oficiales, quienes tomaron posesión inmediatamente: Adolf A. Berle, Presidente del Consejo de Directores; Harold F. Saufley, Vice-Presidente Decano; Ellis Slatoff, Vice-Presidente Decano; Charles B. Broeg, Vice-Presidente, Director Técnico; Irving L. Cook, Vice-Presidente, Director de Ventas; Andrew deBalogh, Vice-Presidente, Productos Especiales; Manfred Landers, Vice-Presidente, Servicios Técnicos; José M. López-Oña, Vice-Presidente, a cargo de operaciones de la planta de Brooklyn; John G. Schuettinger, Vice-Presidente, Ingeniería; Fred Bruder, Vice-Presidente Auxiliar.

Los accionistas aprobaron tambien una resolución cambiando el nombre de American Molasses Company por SuCrest Corporation.

Fallece Joseph F. Abbott

El 9 de Noviembre falleció en su hogar en Greenwich, Connecticut, Joseph F. Abbott, quien fué Presidente de la American Sugar Refining Company desde 1929 a 1953. Mr. Abbott se graduó en 1912 en la Escuela de Leyes de la Universidad de Georgetown, sirvió en la artillería de campaña durante la Guerra Mundial I e ingresó en la American Sugar en 1919. Despues de sus extraordinarios servicios como Presidente fué electo Presidente de la Junta Directiva en

1953, retirándose en 1957. Tomó parte destacada en la organización del Sugar Research Foundation, fué co-fundador y depositario de la Nutrition Foundation y director de otras empresas. Le sobreviven su esposa, la señora Laura C. Griswold Abbott, dos hijos: Charles Griswold y Joseph Alan Abbott; y un hermano, Timothy Charles Abbott.

Libro Excelente

por el DR. PIETER HONIG

Manual de Laboratorio para los Centrales Azucareros de Queensland *por el Buró de Estaciones Experimentales Azucareras, Cuarta Edición, precio: 1.10.0 Libras Australianas, libre de gastos. Obtenible del Bureau of Sugar Experiment Stations, 99 Gregory Terrace, Brisbane B 19, Queensland, Australia.*

Se ha publicado la cuarta edición del Manual de Laboratorio para el control técnico de la industria azucarera en Queensland. Dicho libro ha sido editado en forma excelente. Comprende las definiciones de los términos técnicos usados en el control químico de los centrales azucareros, una buena descripción de los instrumentos de laboratorio (ópticos, densimétricos, volumétricos y balanzas), toma de muestras y reactivos y los métodos analíticos estandarizados para la industria azucarera de Queensland, de acuerdo con las recomendaciones de la ISSCT y la ICUMSA, con los cálculos a aplicar.

Algunos capítulos especiales están dedicados al control químico y técnico de las calderas generadoras de vapor (aguas de alimentación, &) y las características del vapor. El manual incluye un capítulo muy útil sobre los ensayos de fertilidad de los suelos, con las determinaciones sobre fosfato aprovechable, potasio y bases totalmente reemplazables.

Otro capítulo muy práctico y útil trata sobre la primer ayuda en los centrales azucareros.

El manual ha sido impreso en forma muy clara, de fácil lectura y muy bien encuadernado. Puede ser calificado como uno de los mejores manuales de laboratorio en el idioma Inglés. Para ciertas compañías originará dificultades el uso de algunas tablas, porque los volúmenes están dados en galones Imperiales; pero por medio de tablas de conversión, de manera muy sencilla, todos los valores pueden ser convertidos al sistema métrico si así se desea.

Los laboratorios azucareros de todo el mundo recibirán positivos beneficios teniendo éste manual disponible en su biblioteca de los centrales. Las tablas están muy completas y algunas útiles tablas han sido ampliadas; por e jemplo, la relativa a la determinación de azúcares reductores por el método de Eynon & Lane sobre líquidos de alta pureza; en la cual se ha adicionado una columna para los licores que contengan 0.14 a 0.50% de azúcares reductores sobre el brix. Esta tabla se necesita en muchos casos en las operaciones de refinería y no se encuentra en la mayoría de los manuales analíticos.

CONTROL

Para mayor información, comuníquese con el representante de CUTLER-HAMMER más cercano

Argentina—Buenos Aires:
Intec International S. A.
Florida 323

Brasil—Río de Janeiro:
Sudeletro, S. A.
Caixa Postal 3733

São Paulo:
Sudeletro, S. A.
Rua Florencio de Abreu, 77

Colombia—Bogotá:
Eryk Bronner Patrias
Carrera 10, No. 14-56

Medellín:
Cano Gutierrez Ltda.
Calle 50 #51-29

Cali:
Ing. Eduardo Ospina
Calle 12 No. 1-12

Costa Rica—San José:
Costa Rica Engineering Co. Ltd., Box 3042

Chile—Santiago:
Carr y Cía. S. A. C.
Casilla 2439

El Salvador—San Salvador:
R. J. López, Box 675

Guatemala—Guatemala:
Felix Montes & Cía. Ltda.
8a Calle 3-27, Zona 1

Haiti—Port-au-Prince:
Charles Fequiere & Cie.
Box 398

Honduras—Tegucigalpa, D.C.:
Casa Commercial Mathews, S. A., Apartado 39

Jamaica—Kingston:
Masterton Ltd., Box 73

México—México D.F.:
Cutler-Hammer Mexicana, S. A.
Poniente 44, No. 3413

Sociedad Electro-Mecánica, S. A.
Manuel Ma. Contreras No. 25

Nicaragua—Managua:
Reyes & Jacobson Cía. Ltda., Apartado 1749

Panamá—Panamá:
Cía. Servicios Eléctricos, S. A.
Apartado 676

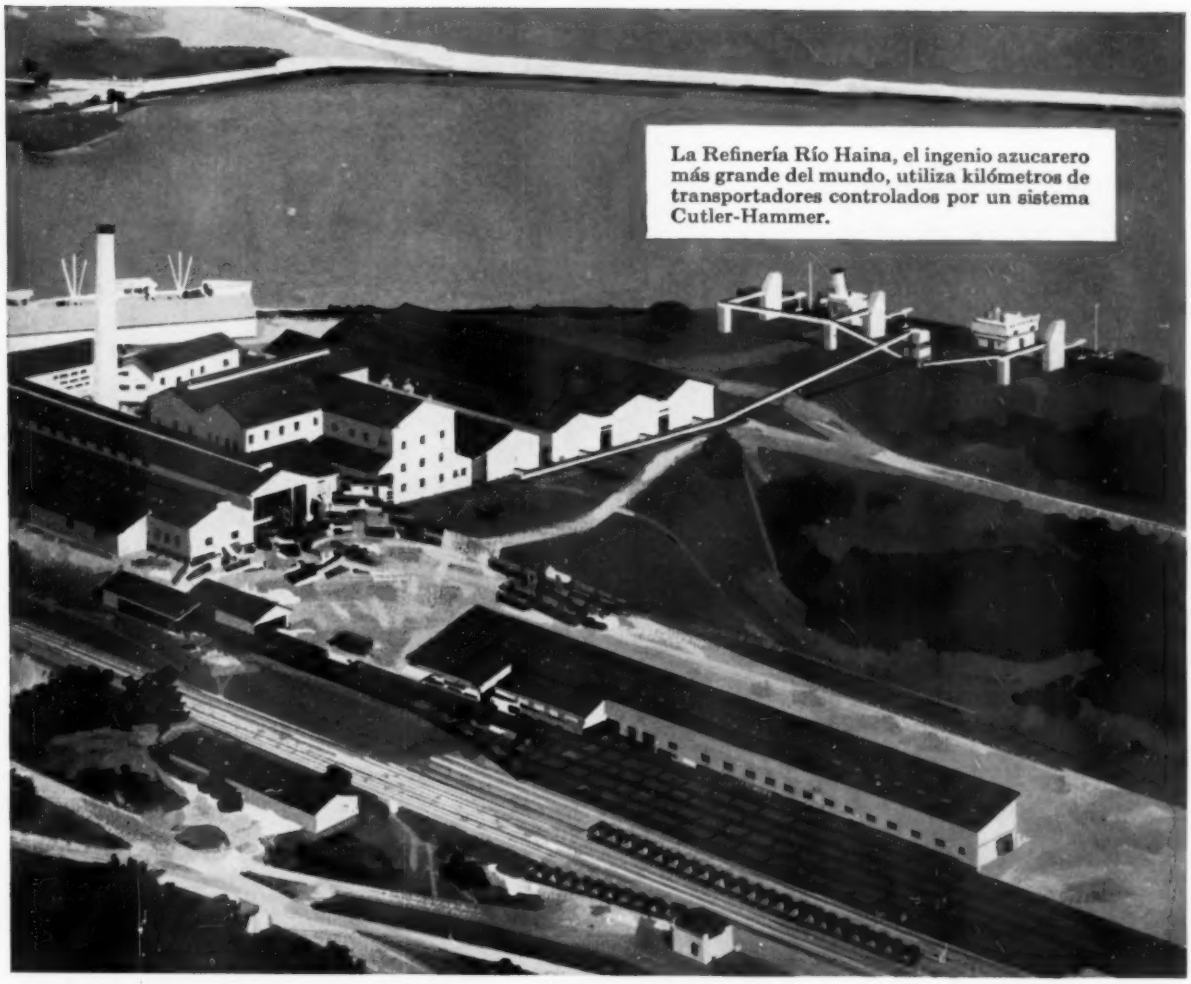
Perú—Lima:
Elecsa, S. A., Apartado 4618

Puerto Rico—San Juan 23:
Marina Electrical Supplies, Inc., Box 4526

República Dominicana
Ciudad Trujillo:
Importadora Tropical, C por A., Apartado 750

Uruguay—
Intec International, S. A.
Florida 323
Buenos Aires, Argentina

Venezuela—Caracas:
Marketing Associates C.A.
Apartado del Este 11316



La Refinería Río Haina, el ingenio azucarero más grande del mundo, utiliza kilómetros de transportadores controlados por un sistema Cutler-Hammer.

Sean kilómetros de transportadores, o un simple circuito...¡Cutler-Hammer los controla mejor!

Este complicadísimo sistema de transportadores, integrado con tableros de control central, conduce el azúcar a granel desde los trapiches y el ingenio hasta los depósitos de almacenamiento y, finalmente, a los almacenes de embarque.

Es uno de los sistemas de acarreo de materiales más eficientes del mundo. ¡Un modelo de automatización para el presente decenio!

Ya sea que usted necesite sistemas complicados de control, o un buen equipo para la entrada de servicio en residencias o edificios comerciales, recuerde que Cutler-Hammer posee los materiales y conocimientos para hacer el mejor trabajo.

El representante de Cutler-Hammer más cercano tendrá sumo agrado en brindarle su cooperación. Llámelo en cuanto inicie usted los planes.

Nuevo Interruptor Automático de Seguridad en hermoso estilo moderno. Su compensación superior de la temperatura ambiente, que lo distingue, garantiza su exacto funcionamiento en todos los climas.

¿ALGO NUEVO? DIRIJASE A...

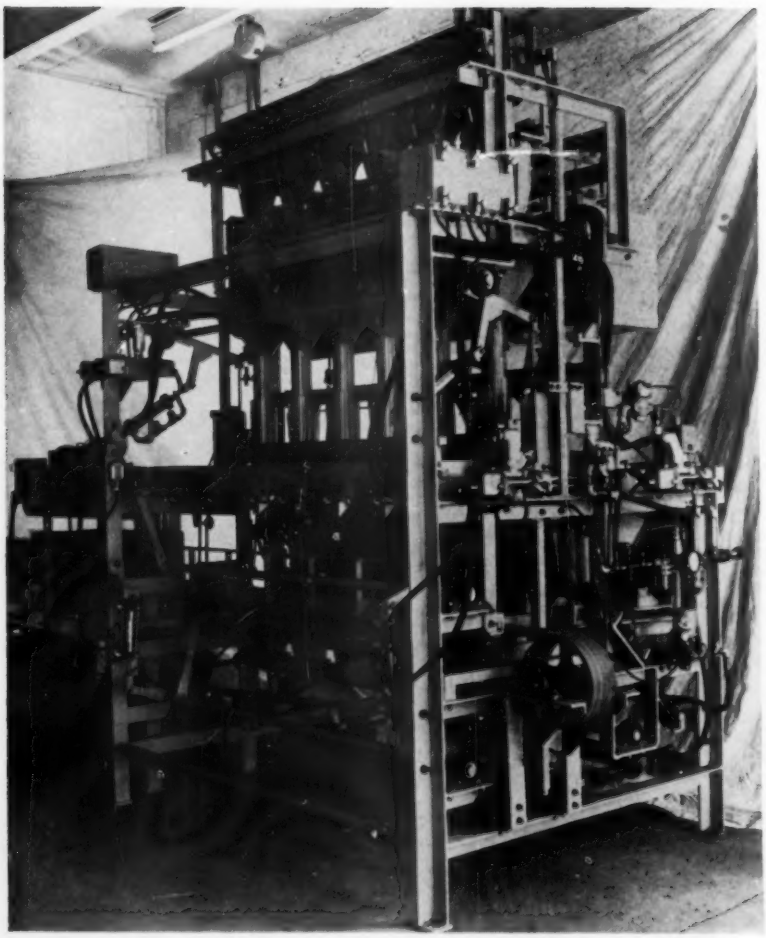
CUTLER-HAMMER

International, 270 N. 12th Street, Milwaukee 1, Wisconsin, E.U.A. Dirección cablegráfica: CUTLER-MILWAUKEE

CONTROL

IMPROVE THE APPEARANCE OF YOUR FILLED BAGS

Con una Máquina Merrifield Tipo 210 de Alimentar y Envasar Automáticamente



La Máquina Merrifield Tipo 210 de envasar, completamente automática, se construye en dos secciones. La primer sección, ilustrada arriba, alimenta automáticamente los sacos vacíos, los llena automáticamente por medio de básculas de peso neto y descarga tambien automáticamente los sacos llenos al sitio donde se cierran en forma contínua y automática. Arriba se muestra solamente la parte inicial del sitio donde se cierran.

Puede usarse el equipo Automático de Cerrar Merrifield Tipo 210, o cualesquier otro sistema de cierre. La Máquina Automática de Cerrar Merrifield Tipo 210 ejecuta automáticamente las operaciones de Asentamiento, Formación, Alforzado, Espaciamiento y Costura.

Con el Modelo 210 Merrifield de Alimentar y Envasar Automáticamente los sacos vacíos son colocados en seis cámaras de alimentar; cada una contiene suficiente cantidad de sacos para el abasto de la máquina por 20 minutos.

El equipo alimenta automática y simultáneamente seis sacos vacíos a los seis picos surtidores para llenar. Y la báscula automática y simultáneamente llena los seis sacos.

Los seis sacos llenos son automática y simultáneamente descargados al conductor de banda que los entrega al sitio donde se cierran.

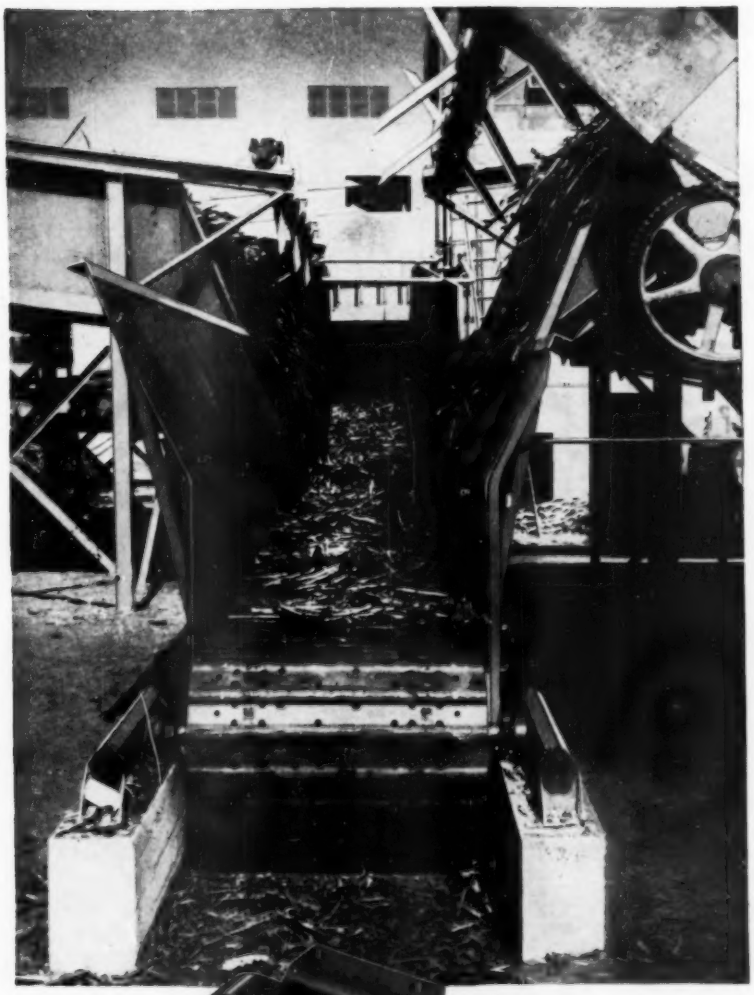
Se usa aire comprimido para la operación de alimentar los sacos: se necesitan 16 piés cúbicos por minuto a 120 psi. La especificación eléctrica de la báscula es 110 volts, 60 ciclos, una sóla fase. El amperaje máximo es 15. El motor standard para impulsar la máquina de asentar y espaciar es de un caballo de fuerza, 440 volts, 3 fases, 60 ciclos y el motor para la máquina automática de coser es.

Al usar seis cámaras de alimentar y seis picos surtidores se obtiene más alta velocidad que cuando se usa solamente un surtidor para llenar; tambien es posible poner mayor número de sacos en las cámaras de alimentar. Tambien se elimina la necesidad de separar la regulación de tiempo. Han sido muy simplificados los ajustes y la operación del equipo, necesitándose menos habilidad mecánica que con la regulación de tiempo de precisión a alta velocidad.

Para el azúcar granulado la velocidad de ésta máquina es de 50 sacos por minuto para el tamaño de dos libras; 45 sacos para el tamaño de cinco libras y 35 sacos por minuto para el tamaño de diez libras.

J. D. MERRIFIELD & SON

ROCKY FORD — U. S. A. — COLORADO



Cadena para Transportador de Caña para Molinos de alta Capacidad

Cadena para Transportador Intermedio

Cadena para Transportador de Bagazo

Reduzca sus costos de conservacion con cadenas Jeffrey para ingenios

Usted mantendrá al mínimo sus costos de reposición presentes y futuros estipulando las cadenas Jeffrey para el manejo de materiales.

He aquí porqué:

- Están diseñadas expresamente para servicio en ingenios: conductores de caña para molinos de alta capacidad, conductores intermedios y conductores de bagazo. Cada tipo disponible un una serie completa de tamaños.
- Las cadenas Jeffrey son construídas para largo servicio, comenzando con la selección del metal correcto de calidad regulada y verificada durante el proceso fabril.
- Las cadenas Jeffrey están respaldadas por la experiencia y reputación de uno de los más grandes fabricantes de cadenas en el mundo.

Cuando usted necesite cadenas, estipule la marca Jeffrey para servicio duradero y seguro. The Jeffrey Manufacturing Company, 916 North Fourth Street, Columbus 16, Ohio, E.U.A.

DIVISION DE EXPORTACION

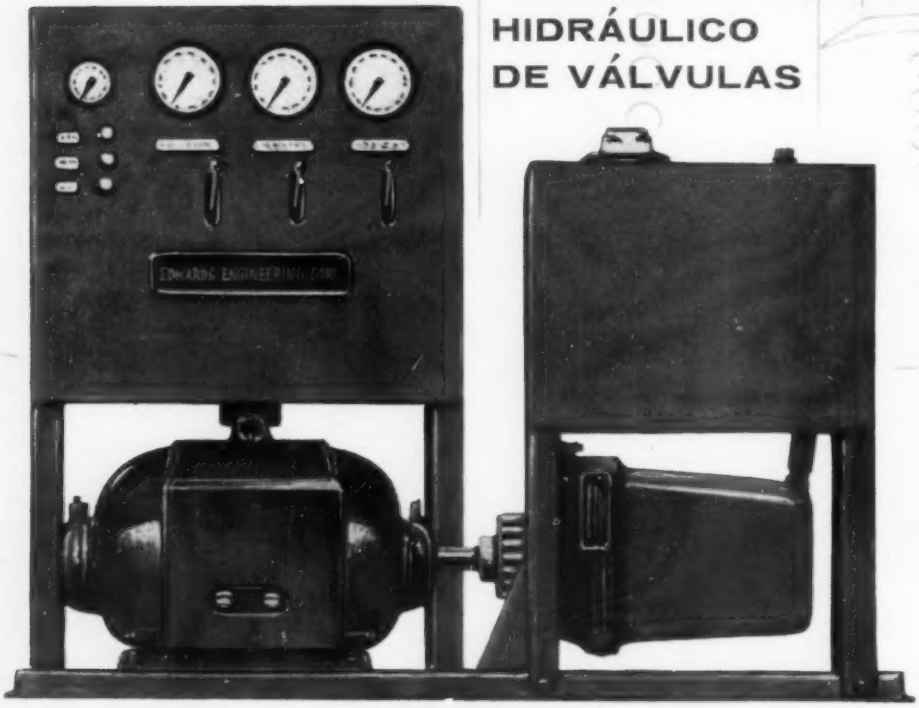
JEFFREY

Si hay que transportarlo, elaborarlo o extraerlo de minas, es tarea de trabajo para Jeffrey.

ESPECIFIQUE EL SISTEMA

EDWARDS

PARA ACCIONAMIENTO HIDRÁULICO DE VÁLVULAS



PORQUE

1 Se adapta fácilmente a casi cualquier tipo de válvula—no necesita válvulas especiales.

2 El cilindro de accionamiento va montado directamente en la válvula.

3 La acción es rápida y positiva.

4 El sistema queda permanentemente lubricado por el mismo fluído hidráulico.

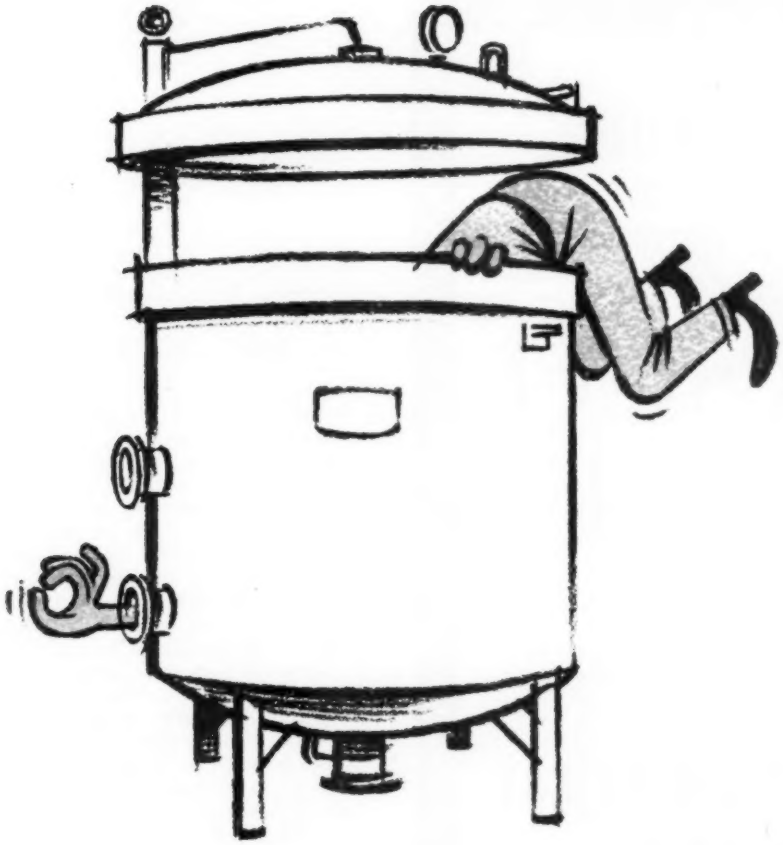
5 Tiene sistema de reserva para con alta presión aflojar válvulas pegadas, pero al mismo tiempo con bajo desplazamiento para evitar golpe una vez aflojadas.

6 Una sola unidad motriz acciona un grupo de válvulas.

7 Se conservan mejor las válvulas que con accionamiento manual.

8 Se ahorra tiempo y trabajo.

EDWARDS
ENGINEERING CORPORATION
1170 Constance Street • New Orleans 13, U.S.A.



UN FILTRO QUE VALE LA PENA EXAMINAR

Considere su estación actual corriente de filtración de licores.—Entonces elimine todo el trabajo de filtración, todos los paños de filtro, el lavado de paños de filtro y los derrames.

¿Increíble?

Pues no, porque eso mismo es lo que un sistema Durco-Enzinger totalmente automático hará en su planta.

Usted puede lograr lo mismo con su sistema de filtración de segunda carbonatación—y también hay cosa asombrosas que podemos hacer en su estación de primera carbonatación.

Con los filtros Durco-Enzinger, usted puede aprovecharse de estos adelantos técnicos exclusivos:

- Detector patentado de espesor de torta
- Esclusa oscilante
- Espaciadores de hopa tipo de garras
- Esclusa rotativa
- Cierre por ruedas de mariposa

Obtenga una copia del Boletín EF/2a. y vea porqué vale la pena examinar este filtro.

DURCO

DIVISION ENZINGER

THE DURIRON COMPANY, INC., Dayton, Ohio Sirviendo á las industrias de proceso

"GASCO" "GASCO" "GASCO"

BIENVENIDOS

TECNICOS AZUCAREROS

GASCO

Guanica Agricultural Service Co., Inc.

ENSENADA

LAJAS

A1 SERVICIO DE LOS COLONOS

- Preparación de terreno
- Cultivo
- Equipos de corte y recolección
- Zanjeo y nivelación
- A cargo de Personal Técnico

UNA AFILIADA DE CENTRAL GUANICA

South Puerto Rico Sugar Corp.

Productores del azúcar marca

COTORRO

"GASCO" "GASCO" "GASCO"

Puerto Rican Extractos

(*Viene de la página* 66)

pararán nuevas áreas. A base de la experiencia de los años anteriores confiamos en obtener resultados más precisos.

■

El Programa de Luce & Co. sobre Registro de la Cosecha, Técnicas sobre Muestras e Interpretación y Uso de los Datos Analíticos

BRUCE REMICK, *Assoc. de Téc. Azuc. de P. R., Dic. 1961*

La diagnosis foliar se emplea actualmente en muchas áreas productoras de caña de azúcar del mundo para determinar las necesidades de abonos y humedad de las cosechas; habiendo demostrado ser un valor dondequiera que se ha usado. La firma Luce & Co. está empleando actualmente un sistema de Registro de la Cosecha, el cual, dentro de los próximos dos años, se propone y espera lograr un señalado efecto sobre aumentos de caña y azúcar por acre; y al mismo tiempo hará posible un uso mas económico de los abonos.

El texto de éste trabajo trata sobre las técnicas empleadas para el muestreo así como la manera de interpretar los datos analíticos foliares, o de las hojas.

En nuestro Sistema de Registro de la Cosecha hay unos 10,000 acres en los cuales se toman muestras sistemáticamente; lo cual representa sobre 800 muestras mensuales. Se ha establecido un itinerario el cual proporciona un intervalo de exactamente cuatro semanas entre las muestras de cada uno de nuestros sitios o solares; permitiendonos comprobar la situación de nutrientes y humedad de cada campo con respecto a doce fechas igualmente espaciadas durante el curso del año. Se describe detalladamente la técnica seguida en el muestreo.

Al completarse el exámen de las muestras por el laboratorio, los datos analíticos sobre el nitrógeno, fósforo, potasio y azúcares totales se remiten a la oficina sobre Registro de la Cosecha, donde se unen a las determinaciones de porcientos de humedad realizadas sobre cada muestra cuando se recibe del campo. Todos éstos resultados son comparados con sus respectivos índices críticos a los efectos de señales de deficiencias en las áreas muestreadas. Cuando hay indicaciones positivas sobre las mismas, se llama la atención inmediatamente al Departamento de Cultivos; citándose a una reunión del personal de Investigaciones y Cultivos a los fines de discutir las medidas necesarias para corregirlas. El Registro para Control de la Cosecha ha sido de lo más útil para revelar deficiencias provisionales de nutrientes y humedad en las cosechas durante su desarrollo; siendo además una guía para el control del regadío y la maduración.

La caña que se vá a cortar en la próxima zafra se pone bajo un plan de maduración durante dos o tres meses, segun se trata de cultivos cortos o largos, respectivamente. El plan de maduración consiste en alargar los intervalos entre las operaciones de regadío y paralizando las aplicaciones de fertilizantes con el propósito de interrumpir el crecimiento sin afectar adversamente la calidad de la caña y lograr una acumulación de sacarosa durante éstos últimos meses decisivos. Todo hecho con el objectivo de elevar los rendimientos en el central azucarero. El plan de maduración es efectivo solamente si los requerimientos de nutrientes y humedad han sido satisfechos durante el crecimiento; siendo de escaso valor sobre cañas nó saludables. El "Registro de Maduración" constituye la forma gráfica empleada para observar el progreso que cada campo vá alcanzando durante su período de maduración.

Si las necesidades sobre nutrientes y humedad de la cosecha, durante su crecimiento, han sido adecuadamente satisfechas; y se ha seguido un bien controlado plan de maduración, los rendimientos en TCA y TSA mostrarán un positivo aumento

sobre los rendimientos obtenidos en los mismos campos antes de establecerse el Registro de la Cosecha. Nosotros esperamos ver resultados aún mayormente positivos sobre nuestra labor, en la próxima información sobre la zafra de 1962.

■

Avalúo de Productos Químicos en el Control de Malezas e Insectos

RAFAEL A. BERRÍOS. *Asoc. de Téc. Azuc. de P. R., Dic. 1961*

Existe en el mercado una diversidad de productos hierbicidas, algunos de los cuales son altamente recomendables para la caña de azúcar; otros tienen que ser más ampliamente probados porque su forma de comportarse es aún dudosa. Durante los últimos años nosotros hemos intentado hacer el avalúo de distintos hierbicidas con el fin de determinar si causaban daños a la planta de la caña de azúcar. Si comprobábamos que el hierbicida no producía daño, entonces estudiábamos la duración de sus efectos. El producto químico se consideraba excelente cuando el campo se mantenía limpio de hierbas y cerraba sin tener que usar otro hierbicida adicional de emergencia. Una tercera fase del avalúo se refiere a la cantidad a usar.

Algunos hierbicidas son efectivos sobre ciertas especies de hierbas solamente. Hemos realizado esfuerzos para determinar cuáles hierbas son controladas y por cuáles hierbicidas.

En 1960 se hicieron una serie de ensayos para determinar la efectividad de tres bien conocidos hierbicidas de pre-emergencia: Simazin, Diuron y Monuron. Se decidió utilizar Simazin y Diuron; pero aún experimentalmente. Se encontró que cuatro libras de cualesquiera de los productos químicos era cantidad óptima. Diuron actuó mejor en las áreas lluviosas, en tanto que Simazin resultó mejor en las áreas secas.

En 1961 se introdujeron varios nuevos hierbicidas. Kuron, un nuevo tipo al estado líquido, fué altamente recomendado como hierbicida de pre-emergencia así como exterminador de hierbas, teniendo mas o menos la misma acción que el 2,4-D. Como atomización de post-emergencia dió muy buenos resultados toda vez que una gran variedad de hojas-anchas fué controlada por el mismo y además mantuvo los campos limpios alrededor de seis semanas. Mas tarde fué probado en pre-emergencia y los resultados fueron muy prometedores.

Una combinación de 2-½ libras de T.C.A. y 2-½ libras de Doupon aplicada dos veces nos dió un control sobre 80 días. Tambien obtuvimos buenos resultados con la combinación de T.C.A.—Diuron. En todas los casos antes citados el 2,4-D fué usado dependiendo de la presencia o ausencia de hojas-anchas.

En el campo de los insecticidas el *Diatraea saccharalis*, comúnmente conocido por borer, es responsable a considerables pérdidas de azúcar cada año en Puerto Rico. Otro tipo de borer, *Elasmopalpus lignosellus*, tambien causa pérdidas substanciales.

Se han usado muchos insecticidas; por ejemplo, Endrin, Diazinon, BHC y otros. El Endrin, tanto en forma granular como líquida ha dado buenos resultados, los cuales hasta ahora han sido prometedores, aunque es preciso realizar mucha labor de investigación antes de arribar a conclusiones definitivas.

El afidio amarillo ha sido parcialmente controlado por aplicaciones de Endrin, BHC o Diazinon. Un control positivo de la larva-blanca fué logrado aplicando Aldrin en la proporción de medio galón por acre en el momento de arar. Distintos nematocidas tales como el Nemagon, Fumazone y D.D. han sido probados. Las concentraciones empleadas han fluctuado desde un galón hasta uno y medio galones. Los métodos de aplicación fueron dos: Primero, usando un dispositivo de medida que regulaba el flujo del nematocida dentro del agua de regadío; y segundo, utilizando un aditamento de fertilización sobre el tractor cuando aplicábamos gránulos de Nemagon a razón de cien libras por acre. Hasta ahora no tenemos resultados definitivos toda vez que éstas pruebas fueron hechas hace muy pocos meses; pero confiamos tener más información en el próximo futuro.

CLEMENTE SANTISTEBAN, INC.

Apartado 4304
San Juan, Puerto Rico
Tels. 6-3371 - 6-3483

Ford & FORDSON TRACTORS

ELECTRIC WHEEL CANE CARTS

Cargadoras de Caña BROUSSARD montadas en tractores FORDSON standard de goma o con tracción delantera MANUEL y en COUNTY de Oruga. Carros de Caña ELECTRIC WHEEL de 10' a 14' de largo para cargar mecánicamente. Con capacidad de cinco a diez toneladas.

Extractos de Publicaciones Azucareras

Publicados bajo los Auspicios de la Sociedad Internacional de Tecnólogos Azucareros de Caña por Arreglo Especial

Profesor Mario A. Mascaró, Redactor

Campo

Sal Común para la Remolacha Azucarera?

J. C. HOLMES, *B. Sc., M. S., Edinburgh School of Agriculture, British Sugar Beet Review, Vol. 29, No. 4, pp. 163-164, 1961.*

No hay duda que la sal común aumenta el rendimiento de la remolacha azucarera; la extensa serie de pruebas realizadas en el Reino Unido desde 1940 a 1949 lo demostraron claramente. Tambien resulta claro que la sal desempeña, al menos en parte, la misma función que la potasa. El incremento de rendimiento derivado de la sal resulta disminuído considerablemente cuando es aplicada la potasa.

Se efectuaron doce experimentos en Escocia; los datos demuestran que la sal resultó allí menos efectiva que en el Reino Unido. Una serie adicional de ensayos se efectuó durante los años 1951 a 1957, con los resultados expresados en dos tablas.

Haciendo una comparación del efecto de la potasa y de la sal común sobre la cosecha de remolacha, no hay duda que la sal es más efectiva y además barata. Con vista de tales resultados se podría considerar usar sal en lugar de potasa. Sin embargo, la remolacha toma potasa del suelo aunque se aplique sal; por tanto suprimir la potasa sería perjudicial para otras cosechas que se hacen en los sistemas de rotación, en las cuales no puede sustituírse la potasa por la sal. Las conclusiones obtenidas de ésta serie de experimentos son bastante claras:

1) Es altamente lucrativo usar sal en la remolacha, además de la potasa, sobre suelos que son bajos o con tendencia a ser bajos en potasa aprovechable.

2) En los suelos con elevado contenido de potasa aprovechable, el empleo de la sal además de la potasa, es improbable que resulte remunerativo.

3) Se necesitan experimentos adicionales para determinar: (a) Los efectos derivados de otros niveles de sal; y (b) Posibles diferencias sobre los resultados de la sal, que pueden ocurrir entre los camellones (que concentran los fertilizantes), y los llanos y bajíos.

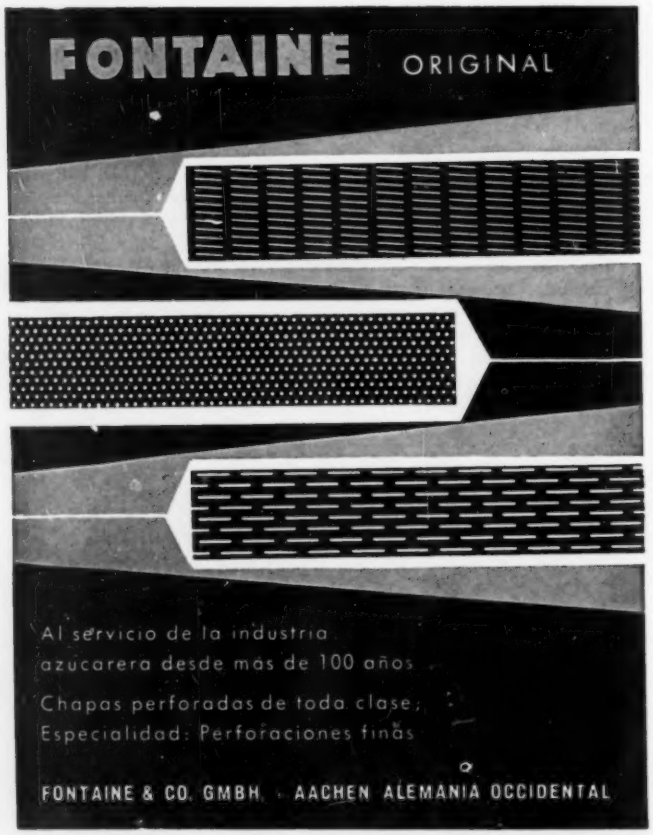
■

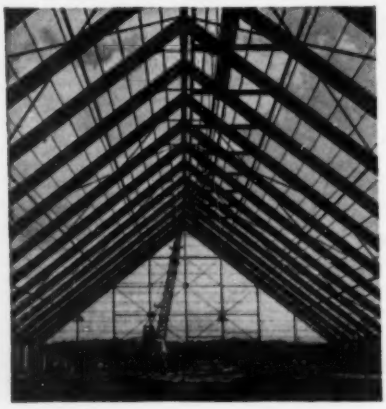
Libros

Aparatos Científicos & Reactivos, edición 1961, (61o. aniversario)

Arthur H. Thomas Company, Box 779, Filadelfia 5, Pa., U.S.A.

Esta publicación contiene 23 páginas sobre aparatos e instrumentos para el ensayo de los azúcares, y los reactivos; adicionalmente en sus 1083 páginas se detallan otros equipos para laboratorios de química y biología, algunos de los cuales son tambien usados por las industrias azucareras de remolacha, caña y refinación.





La U. S. Steel Diseña y Suministra Almacenes Económicos para Azúcar a Granel Conforme a Especificaciones del Comprador

Los diseños basados en la experiencia de la U. S. Steel y necesidades del comprador elevan la eficiencia en almacenes de azúcar a granel. La rígida construcción de la armazón (a la izquierda) elimina los soportos interiores y permite utilizar el piso plenamente. El diseño especial de los pares en tres secciones hace que se puedan armar rápidamente y facilitan los embarques por mar; hace que la armazón pueda resistir vientos ciclónicos hasta 150 millas por hora. Además, las estructuras de acero ofrecen las siguientes ventajas: protección contra incendios, mayor duración y menos gastos de conservación. Para datas sobre las economías dables por los almacenes de acero, escriba a: 100 Church Street, Nueva York 8, N. Y., E.U.A.

USS **United States Steel Export Company**

TRADEMARK

L S U Ofrece un Curso sobre Cultivo de la Caña

La Universidad del Estado de Luisiana ofrecerá un breve curso sobre cultivo de la caña durante la semana de Enero 15 al 20 de 1962. Es el resultado de gestiones de la Liga Americana de la Caña de Azúcar y está principalmente dedicado a los cultivadores, administradores y mayorales; pero tambien a quienes estén interesados en ampliar sus conocimientos sobre numerosas mejoras técnicas para el mejor cultivo de la caña de azúcar. El curso comprende: Procedimientos Experimentales por el Dr. M. T. Henderson; Preparación de la Tierra y Drenaje por el Sr. I. L. Saveson; Siembra de la Caña de Azúcar por el Dr. T. J. Stafford; Cultivo por Sr. E. C. Simon; Fertilización por el Dr. Laron Golden; Ensayos sobre Suelos, Materia Orgánica y Cal por el Dr. W. J. Peevy; Control de Malas Hierbas por el Sr. E. R. Stamper; Control de Insectos por el Dr. W. H. Long; Control de Enfermedades por el Dr. R. J. Steib; Calidad de la Caña por el Dr. A. G. Keller; Cosecha por el Dr. Denver T. Loupe; Mantenimiento de Maquiaria y Seguridad por el Sr. Mansel Mayeux; La Importancia de los Costos por el Dr. Joe Campbell y Multiplicación de la Caña de Azúcar por el Dr. S. J. P. Chilton.

Se Retira Patólogo Azucarero de Gran Fama

J. P. Martin, patólogo principal de la Estación Experimental de la Asociación de Productores de Azúcar de Hawaii, se retira despues de 37 años de esfuerzos científicos al servicio de la industria azucarera Hawaiiana.

En 1924 ingresó en la Estación Experimental de la HSPA; y en 1929 ascendió a jefe del departamento de patología. Nacido en California, obtuvo su título BS de la Universidad de California y su grado MS de la Universidad de Hawaii.

Fué Presidente de la Sociedad Hawaiiana de Botánica y de la Sociedad Orquídea del Pacífico. El Sr. Martin es autor de la obra "Enfermedades de la Caña de Azúcar en Hawaii," y editor de la recién publicada "Enfermedades de la Caña de Azúcar del Mundo," (primer volúmen de una obra en dos volúmenes; ambas en Inglés). Uno de los fundadores originales de la Sociedad Internacional de Tecnólogos de la Caña de Azúcar, (ISSCT).

Manipulación de Azúcar a Granel en Francia

Un cargamento de 6,330 toneladas de azúcar procedente de la República Dominicana fué descargado recientemente en el Havre, Francia; siendo la primer operación realizada por el nuevo equipo de manipulación a granel instalado en éste puerto. Los conductores tienen una capacidad de 180 toneladas por hora.

El Azúcar en la Guerra Fría

Segun Frank A. Kemp, Presidente de la Great Western Sugar Company, la Unión Soviética está incrementando su producción azucarera para utilizar éste artículo de consumo como un arma económica en la guerra fría.

Dice que Rusia se ha convertido en el mayor productor de azúcar del mundo con 250 fábricas de azúcar de remolacha funcionando el pasado año. Sin incluír a los países satélites, la URSS elaboró más del 25% de la producción mundial de azúcar en 1960. Los Estados Unidos quedaron en segundo lugar con el 10% aproximadamente. La Unión Soviética hace planes para tener en producción otras 75 fábricas azucareras en 1965. Estas nuevas plantas darán a los rusos un total de 325 centrales funcionando.

El Departamento de Agricultura de los EE. UU. ha manifestado profunda preocupación sobre ésta situación y sobre los azúcares que Rusia está "comprando" de Cuba. Cantidades enormes de azúcar se han vendido por Cuba a la Unión Soviética y a la China Roja a precios ficticios, bajo arreglos por trueques. Sólo Rusia y la China Comunista saben cuánto de ésta azúcar está destinada a reaparecer en los mercados mundiales.

14 años después . . .

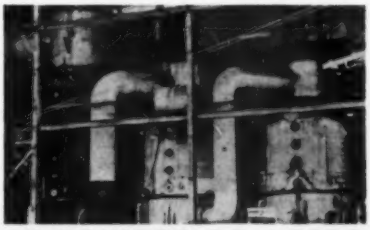
OTRA INSTALACION ST. MARY

El nuevo evaporador del Central Azucarero Evan Hall, con una capacidad de 6,000 toneladas por día, es el mayor de éstos equipos en Luisiana y uno de los mayores del mundo. En 1946 St. Mary construyó un evaporador á triple efecto para Evan Hall. En 1960 el central azucarera volvió á dirigirse á St. Mary—ésta vez por ambas cosas: diseño y construcción.

El nuevo equipo, 44% mayor que el antiguo, puede ser operado bajo condiciones urgentes de tiempo. Se pagará por sí mismo dentro de diez años y durará indefinidamente.

St. Mary Iron Works ha venido trabajando mano á mano con la industria azucarera desde el año 1900. Avísenos, bien que Vd. se proponga construír una planta completa nueva ó añadir una sóla unidad de equipo.

La unidad construída en 1946 por St. Mary Iron Works fué un evaporador triple-efecto con una superficie calórica de 25,000 pies cuadrados. Ha sido "retirada" utilizándose solamente como equipo de repuesto, cada diez días al proceder á limpiar el nuevo evaporador.

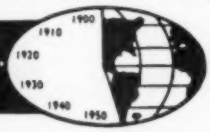


FABRICANTES DE EQUIPOS DE ACERO

El nuevo evaporador triple-efecto es de 14 pies de diámetro, con una superficie calórica de 36,500 pies cuadrados. La unidad fué diseñada, construída é instalada completa con su edificio y andamiajes anexos.

ALREDEDOR DE MEDIO SIGLO

ST. MARY IRON WORKS INC.
FRANKLIN, LOUISIANA - U. S. A.



ALREDEDOR DE TODO EL MUNDO

Irrigador de Auto-Propulsión

La American Factors Associates ha perfeccionado un equipo irrigador de auto-propulsión que utiliza como guía la zanja de regadío. La nueva máquina se está probando en las plantaciones de la Kekaha Sugar Company, en Hawaii.

En su funcionamiento la unidad monta a horcajadas sobre una zanja de regadío. Una bomba auto-cebante, instalada sobre el equipo, toma agua de la zanja y alimenta un par de regaderas gigantes parcialmente circulares; a razón de 1100 gpm a 85 psi. Esto permite una repartición uniforme del agua sobre dos sectores a 135 grados, en la dirección opuesta a la cual se mueve el equipo. Así la unidad puede operar sobre terreno seco. Con el fin de disminuír la cantidad de agua que fluye por la zanja delante de la máquina, se ha instalado una represa en la parte trasera de la estructura del bastidor para frenar el agua. Una rueda guía que gira en la zanja por delante de la máquina, vá montada en la parte delantera de la estructura-bastidor. La presión de la orilla de la zanja sobre la rueda guía orienta a la máquina según ésta se mueve a lo largo de la zanja, regando la caña. Un motor diesel de 85 HP a 2200 RPM suministra la fuerza necesaria para operar el equipo y la bomba. Un tanque de combustible con capacidad para 134 galones, montado sobre la unidad, permite 24 horas contínuas de trabajo sin necesidad de re-aprovisionar combustible.

Hasta el presente el funcionamiento del equipo es muy prometedor. Mediante un juego de atomizadores de distintas dimensiones y cambiar a tres velocidades hácia adelante, se pueden aplicar desde 1.1 a 3.3. pulgadas de agua por acre. Esto permite un promedio de regadío desde 3.8 a 9.3 acres en ocho horas. Para llevar a cabo ésto se necessita un flujo desde 1.100.000 a 1.600.000 galones de agua en la zanja, por día.

Líder de la Resistencia Cubana en el Club Azucarero

En la primera sesión-almuerzo de la temporada de 1961-1962 del Sugar Club, celebrada el 26 de Octubre en el Downtown Athletic Club de Nueva York, se hizo una viva descripción de las actividades de la resistencia patriótica cubana contra el régimen de Castro por un asistente al acto, quien por estrecho márgen logró escapar de un pelotón de fusilamiento. El orador fué Antonio Navarro, cubano nativo, quien se destacó en actividades azucareras, mieles y textiles, antes que dichos negocios fueran confiscados en Cuba. El Sr. Navarro ha sido designado jefe de ventas azucareras en Perú por la W. R. Grace Company.

Mieles en un Alimento Compuesto para Ganado

En un folleto titulado: "Mieles en un Alimento Compuesto para Ganado Vacuno, Cerdos y Pollos," redactado por Schuurmans & Van Ginneken, de Amsterdam, Holanda; se explica un mezclador vertical diseñado para preparar tales forrajes. El equipo mezclador usa mieles en frío y permite una mezcla de proporciones precisas y exactas con otras substancias, entregando un producto seco que no contiene terrones. La operación se hace mayormente en forma automática y el nuevo equipo resulta útil para promover un uso mayor de las mieles para alimento animal.

Dorr-Oliver (Brasil) Ltda.

Como empresa subsidiaria de la Dorr-Oliver, Inc. se ha organizado una nueva firma que atenderá las ventas e ingeniería en el Brasil. La nueva compañía, bajo el nombre Sociedade Tecnica Industrial e Comercial Dorr-Oliver (Brasil) Ltda., tendrá sus oficinas principales en Sao Paulo y manejará los Clarificadores Dorr, los Filtros Oliver y otros equipos Dorr-Oliver en el territorio del Brasil. Dicha empresa subsidiaria está a cargo de Paul Mourier-Petersen, con amplia experiencia en las operaciones internacionales de la Dorr-Oliver.

ADVERTISER'S INDEX

December 1961

Abarca 50-51
Allis-Chalmers International 76
American Air Compressor Corp. 58
Armour Agricultural Chemical Co. 22
Atlas Chemical Industries, Inc. 4
Babcock & Wilcox Company 83
BMA-Braunschweigische Maschinenbauanstalt . . . Inside Front Cover
Brill Equipment Company 58
Broadbent, Thomas, & Sons Ltd. . . . 9; 60
Broussard Machine Company 80
Buttner-Werke 32
Cekop 82
Central Coloso, Inc. 36
Central Igualdad, Inc. 36
Central Roig Refining Co. 44
Chinchilla Varona, Miguel 58
Craig, A. F., & Co. Ltd. 18
Crane International 73
Cutler-Hammer International Co. 88-89
de la Roza Corporation 43
Dicalite Div., Great Lakes Carbon Corp. 70; Outside Back Cover
Dorr-Oliver Incorporated 1
Dow Chemical Interamerican Limited . . . 6
duPont, E. I., de Nemours & Co., Inc. . . . 75
Duriron, The, Company 93
Eagle-Picher, The, Company 21
Edwards Engineering Corporation 92
Eimco, The, Corporation 24-25
Falk, The, Corporation 13
Farrel-Birmingham, The, Company . . . 50-51
Firestone International Company 79
Fives Lille-Cail 78
Fletcher, George, & Company Ltd. . . . 26; 69
Fontaine & Co. GmbH 96
Geigy Agricultural Chemicals 81
Gelb, R., & Sons 58
General Equipment Corporation 16
Henderson, John M., & Co. Ltd. 10
Hepworth Machine Company, Inc. 100
Honolulu Iron Works . . . . Inside Back Cover
Indeck Power Equipment Co. 58
Interbagasse 41; 84
International Harvester Export Co. 85
Jeffrey, The, Manufacturing Co. 91
Johns-Manville 77
King, John, & Co. (Leeds) Ltd. 56
Leffingwell, Roy J. 58
Link-Belt Company 19
Maschinenfabrik Buckau R. Wolf 87
Masson, E. C. 58
Merrifield, J. D., & Son 90
Mirrlees Watson, The, Co. Ltd. 20
Norit 12; 86
Perkins, Logan, Ltd. 58
Porto Rico Iron Works, Inc. 35
Pott, Cassels & Williamson Ltd. 17
Productos Morin 58
St. Mary Iron Works, Inc. 97
Santisteban, Clemente, Inc. 95
Shell Company, The, (Puerto Rico) Ltd. . . 15
Sil Flo Corporation 98
Silver Engineering Works 3
Smith, A. & W., & Co. Ltd. 71
South Puerto Rico Sugar Corp. 94
Southern Cross Engineering & Foundry Works . 58
Squier, The, Corporation 23
Stanhope, R. C., Inc. 58
Stearns-Roger, The, Manufacturing Co. . . . 14
Stein Equipment Company 58
Stewart, Duncan, & Co. Ltd. 11
Stork-Werkspoor 53
Thomson Machinery Company, Inc. 45
United States Steel Export Company . . . 96
Veitscher Magnesitwerke 49
Vulcan Iron Works, Inc. 40
Wabash Power Equipment Company . . . 58
Weaver, Charles, Inc. 58
Western States, The, Machine Co. 5
White Motor Company 7
Wright Chemical Corporation 47

Plan Para Mejorar

(*Viene de la página* 64)

agricultura y para ofrecer servicios diversos a los agricultores. Nos referimos a las regiones suroeste y noroeste de Puerto Rico o sea las áreas conocidas como el Valle de Lajas y el Distrito de Riego de Isabela que abarca los municipios de Aguadilla, Moca e Isabela. Ampliando los límites, a medida que se desarrollara el plan, podría eventualmente incluir las regiones cañeras que embarcan su azúcar por los puertos de Guánica y Aguadilla. De esta manera los servicios podrían ampliarse y ofrecerse en una forma más abarcadora, hasta incluir la transportación y el mercadeo del producto final.

Deben estudiarse con detenimiento las posibilidades de consolidar las fincas y establecer determinadas regiones productoras de caña con el objeto de fomentar el tipo de organización regional capaz de ofrecer todos aquellos servicios al colono que son necesarios para lograr un mejoramiento sustancial en el cultivo de la caña hasta convertirlo en una empresa razonablemente lucrativa.

Consumo de Azúcar en los Estados Unidos

De acuerdo con los datos recopilados por Willet & Gray, el consumo doméstico de azúcar en los EE.UU. para el año 1960, incluyendo las cifras de todos los refinadores, productores é importadores, mostró un aumento del 1.629% sobre el año 1959. Tomando como base las entregas al comercio por los refinadores, productores de azúcar de remolacha é importadores, el consumo para 1960 asciende á 8,603,858 toneladas cortas de azúcar refino; cuya cifra compara con 8,465,968 durante 1959; un aumento de 137,890 toneladas cortas. Aunque no se incluyen las exportaciones, las cifras citadas toman en cuenta todas las entregas á las Fuerzas Armadas de los EE.UU. tanto dentro de la nación como en el extranjero.

Sobre la cifra total del consumo los refinadores de azúcar de caña suministraron 5,730,988 toneladas cortas contra 5,561,634 en 1959; y los productores de azúcar de remolacha 2,087,518 toneladas cortas comparadas con 2,032,158 en el año anterior. A base de una población total de 183,200,000 habitantes en Diciembre 31 de 1960, el consumo per cápita de azúcar refino para 1960 se estima en 93.93 libras.

Reporte Anual de la American Molasses Company

Frank C. Staples, Presidente de la American Molasses Company, presentó en Agosto 31, 1961 el reporte anual de la empresa. En el mismo expresa: "Ha sido un año difícil debido a numerosas influencias adversas, resultantes en gran parte por repercusión de la revolución Cubana. Apesar de éso, hemos trabajado obteniendo utilidades, aunque menores que las del año próximo pasado."

El total de ventas durante el año alcanzó la cifra record de $69,661,081. Se intensificó el programa de modernización de las facilidades de producción y se realizaron mejoras en los laboratorios y en la labor de investigaciones. Además, la Compañía ha continuado su plan de expansión y diversificación, adquiriendo otras empresas adicionales, activas en campos relacionados.

Una de las mejoras de mayor trascendencia ha sido completar el sistema de manejo de azúcares a granel, haciéndolo capaz de recibir, almacenar y manejar todos los azúcares crudos necesarios para la refinería en Brooklyn. Como los crudos de Cuba se importaban previamente en sacos, ahora se hizo imperativo acelerar el programa para manejo a granel. El nuevo equipo instalado permite descargar los azúcares desde las escotillas de los buques por medio de dos grúas flotantes, ayudadas por equipos bulldozer en las bodegas. Dos tolvas receptoras montadas sobre raíles permiten la descarga con óptima eficiencia y velocidad. Desde las tolvas el azúcar a granel pasa a través de canales, que pueden cubrirse contra las inclemencias del tiempo, hasta conductores de banda situados debajo del techo del muelle, transportándola a las estaciones de pesar y recoger muestras; y posteriormente a la áreas de almacenaje. Otra inversión importante realizada ha sido sobre edificios y equipos necesarios para una nueva planta de carbón granular. El proceso a base del carbón granular constituye una mejora tecnológica de trascendencia en el arte de la purificación al refinar azúcar. Tal mejora ha sido esencial para preparar a la refinería para trabajar a máxima eficiencia y economía, a despecho de las diferentes clases y calidades de azúcares crudos procedentes de diversos países.

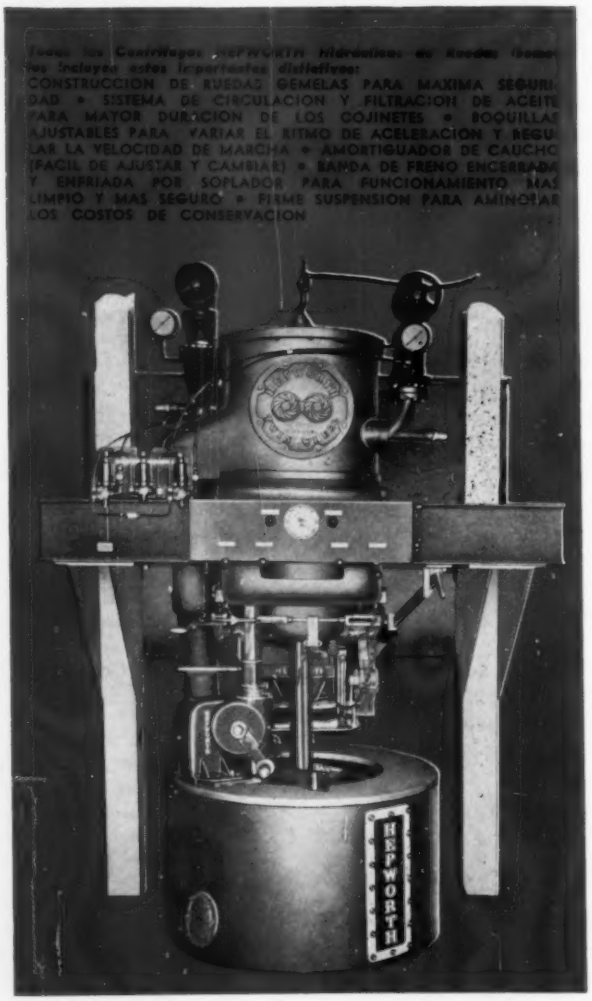
La DURABILIDAD de una HEPWORTH

★ **elimina los costosos paros**

★ **simplifica la conservación**

Diseñadas para servicio pesado día tras día, y fácil conservación en servicio, estas Centrífugas HEPWORTH Hidráulicas de Ruedas Gemelas son el producto de más de 80 años de experiencia en la proyección y construcción de equipo de elaboración de servicio pesado para la industria azucarera.

HEPWORTH también construye centrífugas movidas por motor eléctrico y por correa. Para datos completos sobre cualquier centrífuga HEPWORTH o equipo afin para la elaboración de azúcar, comuníquese con el representante de HEPWORTH más cercano, o escríbanos directamente.



HEPWORTH MACHINE COMPANY, INC.

(Dirección Cablegráfica: HEPFUGAL, NEW YORK)
42-11 NINTH STREET • LONG ISLAND CITY 1, NEW YORK, E.U.A.

Representantes en Todas las Principales Regiones Productoras de Azúcar

CAÑA PARA MOLER—SIN BASURA

HONIRON

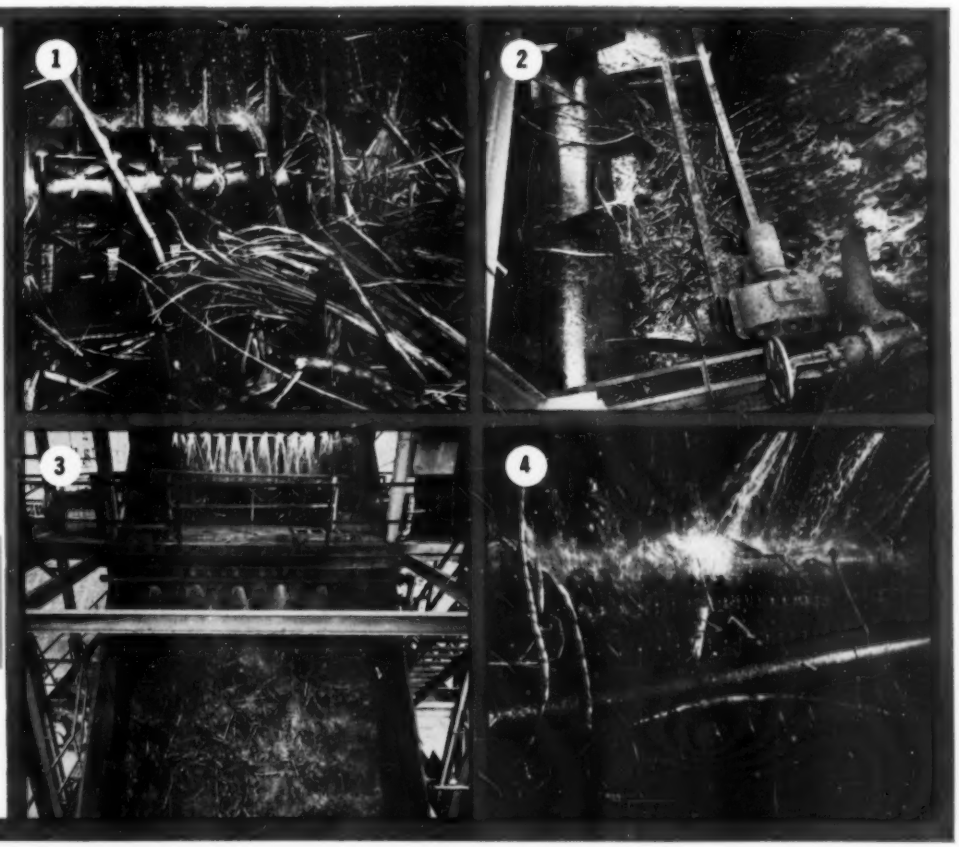
EQUIPOS PARA LIMPIAR CAÑA

Aumentan la extracción, bajan la pureza de la miel final y reducen los gastos de mantenimiento de la planta de moler y de la fábrica

Instalación HONIRON para Limpiar Caña en el Central Lihue, Lihue, Hawaii. Con capacidad para 175 toneladas por hora.

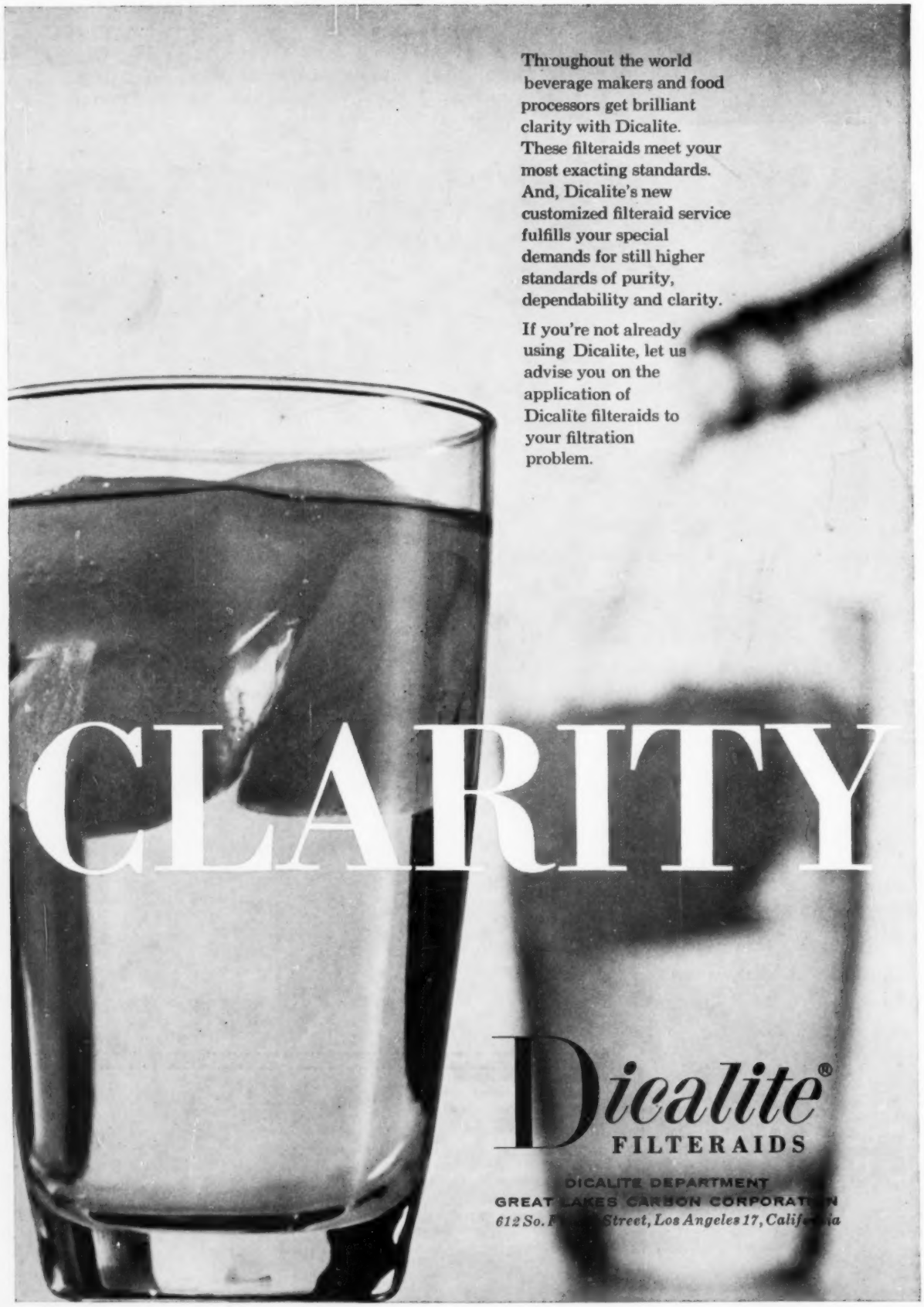
La moderna cosecha mecanizada de la caña crea un problema de basura y lo suelta justamente a las puertas de su fábrica. Para incrementar la extracción, para economías en los gastos de mantenimiento de la fábrica y las mazas de los molinos, para mejorar la calidad del azúcar, escriba Vd. a HONIRON y permítanos suministrarle el equipo adecuado para satisfacer sus propias condiciones.

1. Los bultos de caña entrantes son rasgados aparte segun entran al equipo para limpiar.
2. Se extraen las rocas, arenas y fango.
3. La caña es lavada.
4. Se elimina la basura de la caña y se le dá un enjuague final.



HONOLULU IRON WORKS CO.
Honolulu, Hawaii Hilo Hawaii Manila, P. I.
165 BROADWAY, NEW YORK 6, N. Y.
CABLE: HONIRON NEW YORK

HONOLULU IRON WORKS


Throughout the world beverage makers and food processors get brilliant clarity with Dicalite. These filteraids meet your most exacting standards. And, Dicalite's new customized filteraid service fulfills your special demands for still higher standards of purity, dependability and clarity.
If you're not already using Dicalite, let us advise you on the application of Dicalite filteraids to your filtration problem.
CLARITY
Dicalite®
FILTERAIDS
DICALITE DEPARTMENT
GREAT LAKES CARBON CORPORATION
612 So. F Street, Los Angeles 17, California